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DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE
JULIUS KLEIN, Director

TRADE PROMOTION SERIES—No. 39

RAILWAYS OF SOUTH AMERICA

PART II : BOLIVIA, COLOMBIA, ECUADOR, GUIANAS, PARAGUAY, PERU, URUGUAY, AND VENEZUELA

BY

W. RODNEY LONG
Transportation Division

PRICE 85 CENTS

Sold by the Superintendent of Documents, Government Printing Office
Washington, D. C.

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1927

no. 39

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LETTER OF SUBMITTAL

DEPARTMENT OF COMMERCE,
BUREAU OF FOREIGN AND DOMESTIC COMMERCE,
Washington, December 1, 1926.

SIR: There is submitted herewith a report on the railways of seven South American Republics—Bolivia, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela—and the three Guianas, prepared (from a great variety of sources) by W. Rodney Long, of the Transportation Division of this bureau. The monograph presents very detailed information with respect to all the railways in this territory, covering such phases as the development of the line, the mileage, operating officials, method of purchases, finances, traffic statistics, characteristics of the right of way, number of employees, motive power and rolling stock, repair shops and equipment.

The report was prepared through the cooperation of various locomotive and car building companies, manufacturers of railway equipment, exporters of crossties, and other interested companies with the Transportation Division, the Machinery Division, the Iron and Steel Division, and the Electrical Division of the bureau.

The report is the fourth of a series on railways in Latin American countries. The first of the series, Railways of Central America and the West Indies, was published in May of last year; the second, Railways of Mexico, came from the press in October; while the third, Railways of South America, Part I: Argentina, was given to the public during the summer of 1926. The fifth and last volume in this series, covering the important South American countries of Brazil and Chile, will appear in the near future.

The bureau is grateful for the valuable information furnished, in connection with this work, by the following members of the United States foreign service: American Minister Jesse S. Cottrell, La Paz, Bolivia; Consuls Stewart E. McMillin and D. C. McDonough, La Paz; Consul Richard P. Butrick, Guayaquil, Ecuador; Consuls Gaston Smith and Chester W. Davis, Georgetown, British Guiana; Trade Commissioner George S. Brady; Consul Digby A. Willson, Asuncion, Paraguay; Consul O. Gaylord Marsh, Montevideo, Uruguay; Acting Commercial Attaché L. B. Clark, Montevideo; Consul Alexander K.

Sloan, Maracaibo, Venezuela; Vice Consul George R. Phelan, Puerto Cabello, Venezuela; Vice Consul William P. Garrety, Puerto Cabello; Commercial Attaché William Boaz, Bogota, Colombia; Consul Alfred T. Burri, Barranquilla; Consul Lester L. Schnare, Cartagena. Much information has also been obtained from the Stock Exchange Yearbook (British).

The bureau wishes to express to the Pan American Union its appreciation of the courtesy shown in loaning photographs for use as illustrations in this book.

Respectfully,

JULIUS KLEIN, *Director of Bureau.*

To Hon. HERBERT HOOVER,
Secretary of Commerce.

RAILWAYS OF SOUTH AMERICA—PART II

BOLIVIA[1]

GENERAL FEATURES OF COUNTRY AND COMMUNICATION SYSTEM

Bolivia has an area estimated at from 473,560 to 708,195 square miles, with a population of less than 3,000,000. Its cities and industries lie within the upland region, the table-lands, whose vast wealth is in the form of mineral deposits. This region, mostly at an elevation of 12,000 feet or more above sea level, embraces an area of 65,000 square miles in itself and is bounded on its east and west by the two Cordilleras of the Andes. Within that comparatively barren plateau lies Lake Titicaca, with a connecting chain of smaller lakes.

Communication in Bolivia is difficult, in the main, and is provided chiefly by cart roads and rivers. The railroads are few and are not connected to form any direct artery of communication. At the present time the country has the following railroads in operation, under construction, and projected:

Arica-La Paz Railway, 125 miles in Chile and 151 miles in Bolivia.
Antofagasta & Bolivia Railway, 575 miles in Bolivia and 275 miles in Chile.
Atocha-Villazon Railway, 124 miles.
Empresa Luz y Fuerza Eléctrica de Cochabamba, 49 miles.
Guaqui-La Paz Railway, 60 miles.
Huanchaca de Bolivia Railway, 26½ miles.
La Paz-Yungas Railway, under construction.
Machacamarca-Uncia Railway, 37 miles.
Potosi-Sucre Railway, under construction.
Corocoro-Tarejra Railway. 5 miles.
Cochabamba-to-Santa Cruz railway, schemes proposed.
Santa Cruz-to-Yacuiba railway, proposed.
Santa Cruz-to-Paraguay River railway, projects.
Cochabamba-to-El Beni railway, proposed.
Guayaremerin-Riberalta railway, proposed.
Iquique-to-Oruro railway, proposed.
Juliaca (Peru)-to-La Paz railway, proposed.

151
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The above railroads and the principal concessions are discussed in the following pages.

GUAQUI-LA PAZ RAILWAY

SURVEY OF DEVELOPMENT

This road was constructed by the Bolivian Government under a law passed on October 25, 1900, for the construction of a railway from a point on Lake Titicaca to La Paz. The initial cost was to be met from the proceeds of the alcohol monopoly and a tax on rubber in the Department of La Paz. The Southern Railway of Peru had constructed a road from the port of Mollendo, in Peru, to Puno, on Lake Titicaca, in 1876. From there a line of steamers operated in connection with train service to Guaqui.

---

[1] Two important railways which are partly in Chile and partly in Bolivia—namely, the Arica-La Paz Railway and the Antofagasta & Bolivia Railway—will be included in the chapter on Chile (which will appear in Part III of this series), because of the fact that their ocean termini are at Chilean ports.

Because of the Government's inability to meet the obligations of the bondholders who had financed the construction of the line, which had amounted to $1,070,630, it decided to sell the line outright to the Peruvian Corporation (Ltd.). This sale was consummated on July 15, 1910, for the sum of $1,824,509. On the same date the Guaqui mole was leased to the same company for 15 years on payment of 35 per cent of the gross proceeds of traffic carried over the wharf. The Government retained the privilege of regaining control of the railroad after a period of 10 years. This gave the Peruvian Corporation control of the direct communication system between Mollendo and La Paz. The railway from Guaqui to La Paz is 60 miles in length. Trains are stopped just outside of La Paz and taken into the city by means of electric locomotives.

While there has been some agitation for the construction of a railway from Puno to Guaqui, discontinuing the line of steamship services across Lake Titicaca, there is no probability of any immediate action being taken. The Bolivian Government has informed the Peruvian Government that it is willing to construct the short section from Guaqui to the Desagerat River, but the Peruvian Government has not up to the present time seriously contemplated such construction. In February, 1925, a bill was introduced in the Peruvian Legislature which would authorize the Executive to commence such construction immediately and to complete it within two years. It was expected that the work would be begun by the Peruvian Corporation in September, 1925. However, action was taken in the Bolivian Congress for the construction of the Bolivian section of this road by the Government. For further information, see the report on the Juliaca-to-La Paz Railway in this chapter.

FINANCES

A summary statement of receipts and expenditures for recent fiscal years is given in the table below.

Items	1912–13	1913–14	1916–17	1917–18	1918–19	1919–20	1921–22	1922–23	1923–24	1924–25
Gross receipts	£87, 920	£87, 472	£43, 512	£56, 298	£51, 025	£45, 985	£32, 490	£35, 153	£44, 097	£45, 566
Working expenses	45, 569	49, 295	38, 318	47, 598	45, 588	46, 471	33, 439	33, 439	34, 278	38, 287
Net receipts	38, 351	38, 176	5, 193	8, 700	5, 436	485	2, 641	1, 714	9, 819	7, 279

TRAFFIC STATISTICS

The following table shows detailed traffic statistics of the Guaqui-La Paz Railway since the date of its purchase by the Bolivian Government:

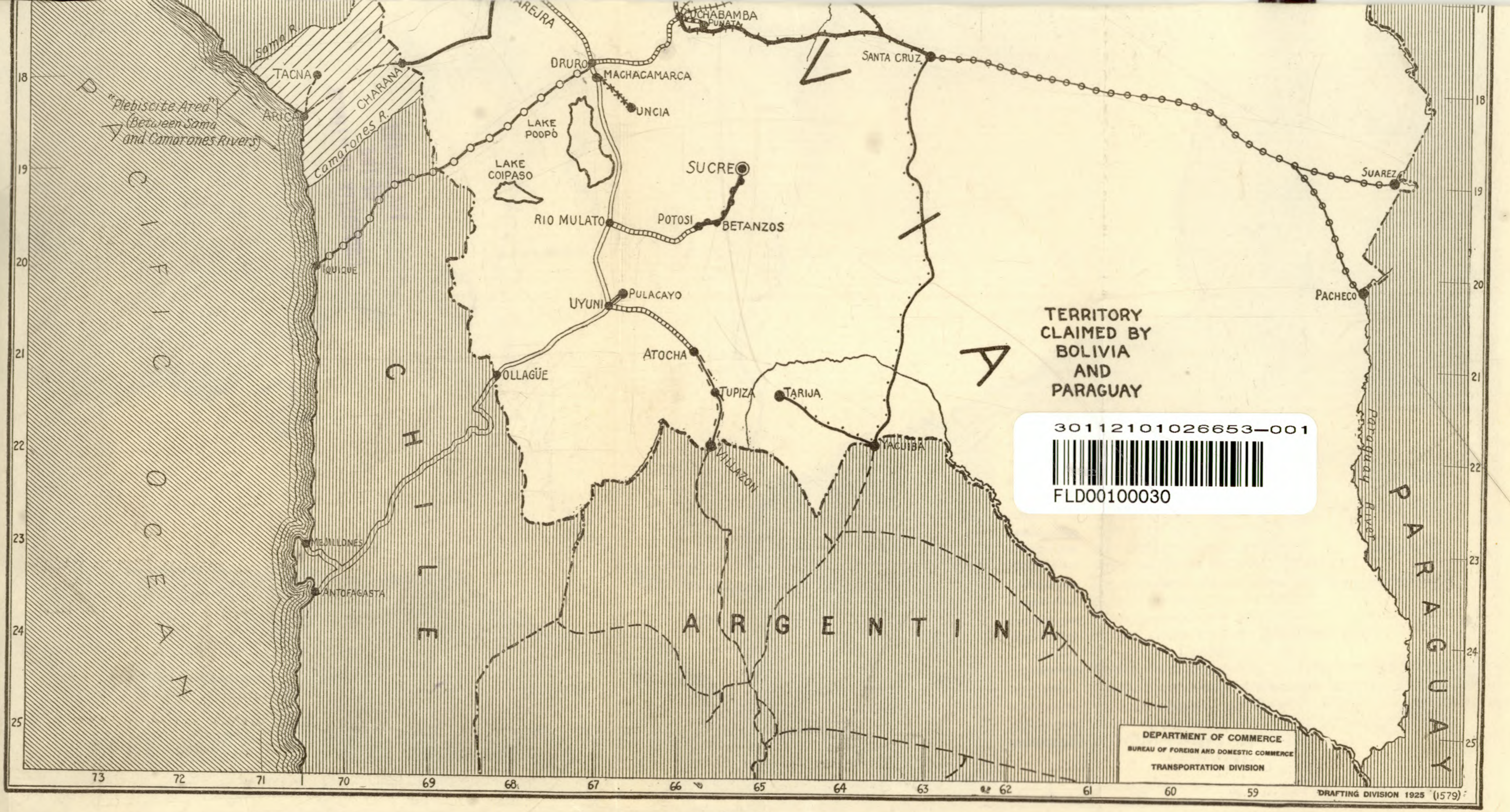

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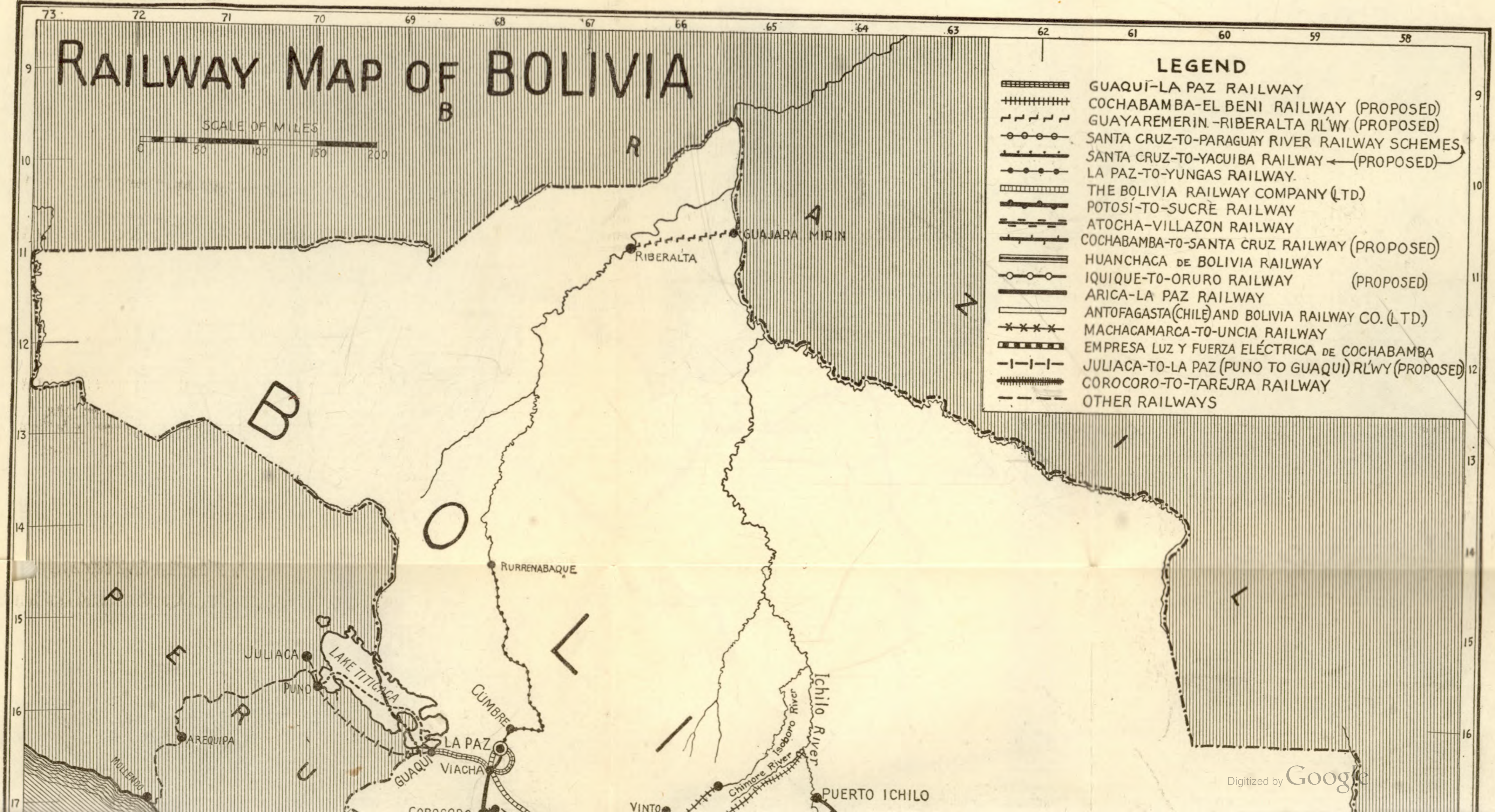
FIG. 1


RAILWAY MAP OF BOLIVIA
SCALE OF MILES
0
50
100
150
200
LEGEND
GUAQUÍ–LA PAZ RAILWAY
COCHABAMBA–EL BENI RAILWAY (PROPOSED)
GUAYAREMERIN.–RIBERALTA RL'WY (PROPOSED)
SANTA CRUZ-TO-PARAGUAY RIVER RAILWAY SCHEMES
SANTA CRUZ-TO-YACUIBA RAILWAY (PROPOSED)
LA PAZ-TO-YUNGAS RAILWAY
THE BOLIVIA RAILWAY COMPANY (LTD.)
POTOSÍ-TO-SUCRE RAILWAY
ATOCHA-VILLAZON RAILWAY
COCHABAMBA-TO-SANTA CRUZ RAILWAY (PROPOSED)
HUANCHACA DE BOLIVIA RAILWAY
IQUIQUE-TO-ORURO RAILWAY (PROPOSED)
ARICA-LA PAZ RAILWAY
ANTOFAGASTA (CHILE) AND BOLIVIA RAILWAY CO. (LTD.)
MACHACAMARCA-TO-UNCIA RAILWAY
EMPRESA LUZ Y FUERZA ELÉCTRICA DE COCHABAMBA
JULIACA-TO-LA PAZ (PUNO TO GUAQUI) RL'WY (PROPOSED)
COROCORO-TO-TAREJRA RAILWAY
OTHER RAILWAYS
B R A Z I L
B O L I V I A
P E R U
GUAJARA MIRIN
RIBERALTA
RURRENABAQUE
JULIACA
LAKE TITICACA
PUNO
AREQUIPA
MOLLENDO
CUMBRE
LA PAZ
GUAQUI
VIACHA
COROCORO
VINTO
Chimore River
Isiboro River
Ichilo River
PUERTO ICHILO
73
72
71
70
69
68
67
66
65
64
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16
17

Periods	Passengers				Luggage and packages		Importations	
	First class		Second class					
	Number	Bolivianos	Number	Bolivianos	Tons	Bolivianos	Tons	Bolivianos
1910	16, 916	26, 020	33, 832	53, 595	712	14, 684	23, 730	401, 222
1911:								
First 6 months	15, 005	28, 742	30, 071	56, 584	650	17, 510	21, 708	391, 968
Second 6 months	14, 509	23, 525	29, 063	52, 463	590	15, 863	22, 608	393, 260
1912:								
First 6 months	18, 944	30, 294	37, 890	55, 587	654	16, 307	21, 650	390, 121
Second six months	20, 422	49, 883	43, 451	49, 173	697	21, 125	21, 348	402, 763
1913:								
First 6 months	18, 483	39, 242	41, 394	48, 434	691	20, 685	19, 784	343, 241
Second 6 months	15, 604	38, 334	33, 430	37, 253	682	19, 783	20, 394	354, 782
1914:								
First 6 months	19, 424	39, 944	41, 451	47, 342	694	20, 943	19, 474	342, 441
Second 6 months	13, 416	25, 351	39, 593	45, 728	583	15, 552	15, 549	147, 383
1915:								
First 6 months	19, 842	31, 612	38, 255	40, 387	491	12, 552	12, 683	125, 244
Second 6 months	15, 234	29, 423	30, 751	37, 493	497	13, 531	10, 524	123, 421
1916:								
First 6 months	14, 112	26, 233	37, 284	39, 791	554	15, 483	13, 464	135, 243
Second 6 months	19, 424	30, 143	36, 424	32, 962	531	13, 747	29, 643	195, 745
1917:								
First 6 months	14, 372	19, 354	36, 752	37, 524	491	10, 567	38, 794	202, 594
Second 6 months	15, 213	25, 431	35, 427	36, 253	497	10, 656	28, 363	188, 573
1918:								
First 6 months	10, 342	22, 896	37, 264	38, 653	557	14, 567	39, 261	225, 654
Second 6 months	9, 445	14, 868	22, 201	35, 341	235	10, 119	18, 343	149, 381
1919:								
First 6 months	8, 227	21, 753	20, 141	33, 153	243	10, 133	19, 492	166, 720
Second 6 months	5, 754	15, 846	22, 198	34, 394	220	10, 082	21, 432	168, 741
1920:								
First 6 months	6, 442	21, 243	23, 171	36, 292	262	10, 181	18, 532	159, 249
Second 6 months	4, 348	17, 211	19, 521	35, 545	139	6, 584	17, 341	157, 391
1921:								
First 6 months	5, 568	18, 543	22, 433	36, 132	147	7, 576	16, 733	148, 625
Second 6 months	6, 347	19, 342	15, 223	35, 453	123	6, 143	15, 542	128, 451
1922:								
First 6 months	3, 565	13, 131	23, 731	36, 755	145	7, 683	16, 433	146, 241
Second 6 months	7, 249	21, 243	22, 477	41, 881	185	9, 584	21, 253	175, 340
1923:								
First 6 months	5, 412	18, 452	24, 641	45, 987	182	9, 496	22, 434	184, 245
Second 6 months	4, 721	17, 243	21, 363	38, 843	153	8, 243	20, 542	165, 633
1924:								
First 6 months	3, 234	15, 672	24, 476	44, 695	173	8, 745	20, 254	156, 362
Second 6 months	5, 717	21, 368	28, 003	54, 089	247	13, 397	21, 877	162, 901

Periods	Exportations		Local cargo		Gross value in bolivianos of all importations	Operating ratio
	Tons	Bolivianos	Tons	Bolivianos		
						Per cent
1910	1, 250	7, 323	4, 320	41, 210	564, 025	56. 00
1911:						
First 6 months	2, 020	10, 421	4, 232	40, 608	598, 036	63. 86
Second 6 months	1, 608	9, 650	3, 264	36, 052	580, 037	
1912:						
First 6 months	1, 106	7, 050	4, 328	41, 063	551, 429	65. 02
Second 6 months	1, 223	8, 251	6, 273	56, 482	593, 687	
1913:						
First 6 months	1, 122	7, 323	5, 141	46, 721	540, 658	56. 48
Second 6 months	1, 132	7, 764	7, 352	65, 233	590, 620	
1914:						
First 6 months	1, 254	8, 943	5, 142	47, 564	547, 187	65. 23
Second 6 months	1, 042	4, 341	4, 393	44, 885	312, 462	
1915:						
First 6 months	1, 035	3, 533	5, 441	49, 844	311, 520	76. 26
Second 6 months	1, 054	4, 359	4, 142	35, 942	322, 480	
1916:						
First 6 months	1, 023	3, 438	5, 332	49, 596	299, 886	76. 10
Second 6 months	2, 204	7, 867	4, 362	36, 232	325, 642	
1917:						
First 6 months	1, 876	5, 343	3, 581	35, 643	308, 426	88. 06
Second 6 months	2, 105	7, 564	5, 421	39, 734	311, 321	

Periods	Exportations		Local cargo		Gross value in bolivianos of all importations	Operating ratio
	Tons	Bolivianos	Tons	Bolivianos		
1918:						*Per cent*
First 6 months	1,943	6,771	4,561	38,523	357,082	84.55
Second 6 months	984	5,525	2,532	28,482	305,643	
1919:						
First 6 months	1,054	6,524	2,424	25,485	301,288	89.34
Second 6 months	693	3,482	3,212	21,183	296,599	
1920:						
First 6 months	1,052	6,483	2,323	21,271	285,346	101.06
Second 6 months	635	2,145	3,365	36,233	260,024	
1921:						
First 6 months	922	3,366	2,144	22,342	264,526	96.26
Second 6 months	893	3,053	3,253	35,471	257,913	
1922:						
First 6 months	993	4,144	2,344	22,134	249,088	91.87
Second 6 months	662	2,254	4,624	37,483	325,980	
1923:						
First 6 months	973	4,642	3,542	29,765	302,597	95.12
Second 6 months	731	3,786	2,433	27,241	290,325	
1924:						
First 6 months	953	3,883	4,423	36,254	295,316	77.73
Second 6 months	1,618	8,248	8,976	47,358	339,220	

OPERATING OFFICIALS

On May 1, 1926, the managing director of the road was O. C. Bury, 43 Threadneedle Street, London. Officials at La Paz, Bolivia, were:

Local manager, C. V. Sampson.
Resident engineer, S. Ainsworth.
Accountant, Sydney C. Shepard.
Commercial agent, J. L. MacIntyre.

PURCHASES

Purchases for the road are made through the office of the Peruvian Corporation (Ltd.) in London (for method used see p. 203, chapter on Peru).

RIGHT OF WAY

Altitude.—The highest point on the road is at Crucero Alto, which is 13,415 feet above sea level.

Gauge.—The road is of 1-meter gauge.

Grade.—The maximum grade on the steam section is 2 per cent, while on the electric section it is 6 per cent for a distance of 9 kilometers.

Curves.—The minimum curve radius is 90 meters.

Ties.—The ties used are of Oregon pine.

Rails.—Light rails weighing 40 pounds to the yard are used on the steam section and 60-pound rails on the electric section.

Loading and clearance.—The maximum size of packages for box cars is 1.90 by 1.40 by 2 meters, while the maximum weight of packages is 18 tons. Thirty-six tons can be carried on three coupled flat cars. Clearance is limited to 27 meters in length and 2.20 meters in width.

Tunnels.—There is one tunnel on the road.

MOTIVE POWER AND ROLLING STOCK

As of May 1, 1926, the road has the following motive power and rolling stock in operation: Nine electric locomotives, 6 steam locomotives, 11 passenger coaches, 2 baggage coaches, 1 seven-passenger motor car (Kalamazoo), and 23 freight cars. Two of the steam locomotives weigh 28 metric tons, one 29 tons, two 46 tons, and one switching engine 15 tons. The capacity of the 11 passenger coaches is 507 persons.

A complete discussion of the Peruvian Corporation (Ltd.) appears in the chapter on Peru.

ATOCHA-VILLAZON RAILWAY

The history of the Atocha-Villazon Railway may be traced to the first railway convention between Argentina and Bolivia, signed June 30, 1894. This convention stipulated that Argentina should undertake surveys for the extension of the Northern Central Railway to the Bolivian frontier and that Bolivia should assume the obligation of having similar surveys made with a view to extending the railway from a point to be determined to a point that would offer the greatest advantages in the interior of Bolivia.

The convention further stipulated that the Argentine Government should make available to the Bolivian Government all necessary funds up to 50 per cent of the expenses required for the construction of the line across Bolivian territory. This sum was to be repaid, 30 per cent from the revenue of the road and 20 per cent through customs duties collected by Bolivia on merchandise that might reach its territory over the new road. When the line to Yacuiba should be completed, the Argentine Government agreed further to proceed through State administration or through private enterprise to continue the railway to within 100 kilometers of Santa Cruz.

While these railway agreements were being put into execution, a contract was signed between the Bolivian Government and Speyer & Co. and the National City Bank of New York for the construction of the central system of Bolivian railroads. After the respective surveys had been completed, it was decided that for better connection with Argentina a line should be constructed starting from Uyuni which should connect Tupiza with the lines coming from La Quiaca. Because of lack of funds the work could be carried out only as far as Atocha.

It therefore became necessary to rely on other resources for completing the work from Atocha to La Quiaca by way of Tupiza. The Argentine-Bolivian agreements interfered somewhat with the liberty of action which the Bolivian Government needed in order to finance such work, so on June 17, 1913, a protocol was signed annulling all previous railroad conventions, but containing the obligation on the part of Bolivia to build in future, and for its own, the La Quiaca-Tupiza line, and subsequently, whenever conditions should permit conformable to its railway plan, the Tupiza-Potosi line by way of Cotagaita.

On August 23, 1915, the Bolivian Congress accepted the proposals of the French firm of Vezin & Cie. for the construction of the line. The Vezins agreed to build the line for £900,000 ($4,379,850) and to complete it within three years. Construction was actually begun on September 20, 1915.

Disagreement between the Government and the contracting firm had meanwhile arisen over some of the details of construction, and the contractors blamed war conditions as the reason for their inability to carry on the work in accordance with the original program. At this time the Government agreed to the rescinding of the contract,

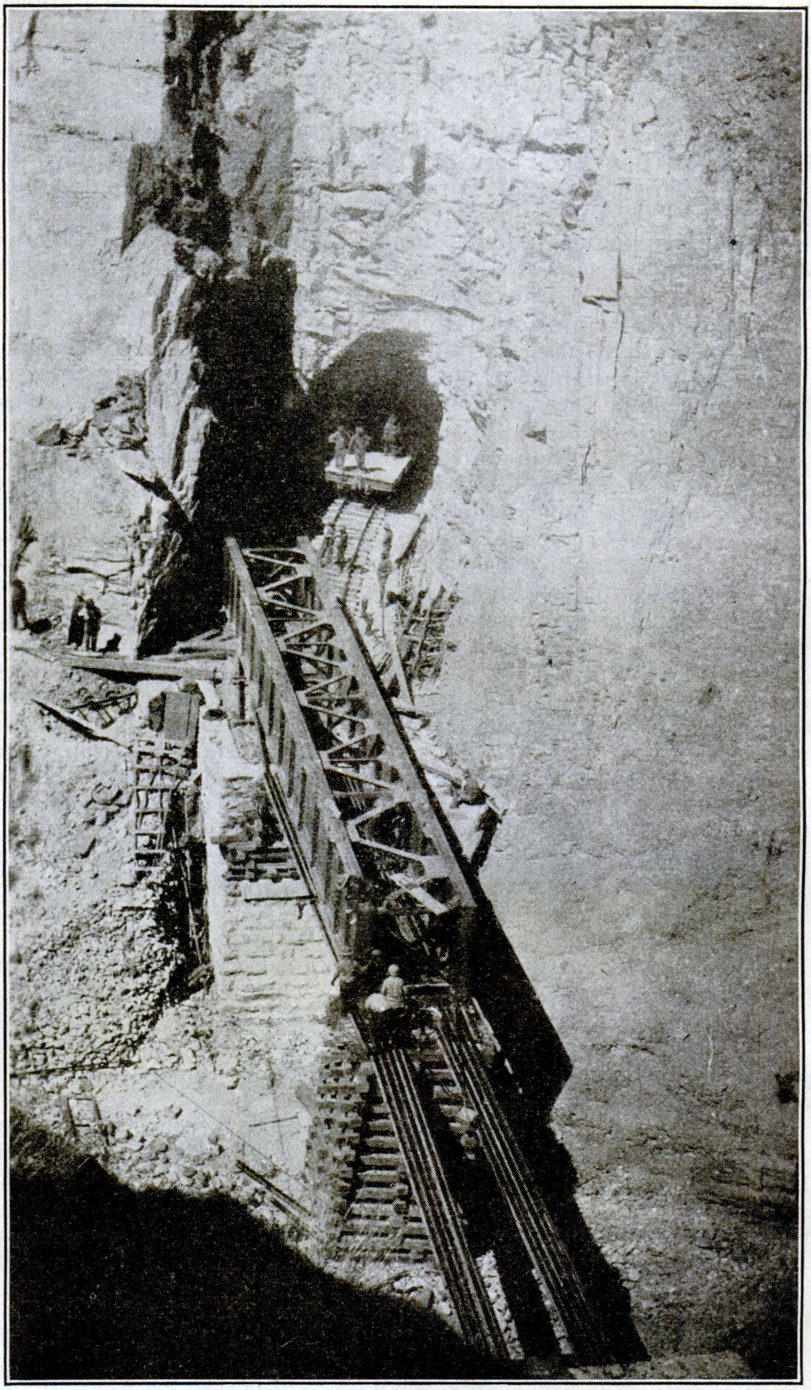

FIG. 2.—Atocha-Villazon Railway: Placing a 20-meter deck-plate girder span across Huacacancha Quebrada, 37 kilometers from Atocha

but Vezin & Cie. demanded 3,640,874 francs ($702,689) as compensation in addition to the payments that had already been made for the work completed. Through negotiations between the French minister at La Paz and the Minister of Public Works, an agreement was arranged for the continuation of the work. The time for completion was extended two years on condition that the company should be fined 200,000 francs ($366,000) for each month of delay beyond this time. The first 30 miles were to be railed at once, though at that time it was difficult to obtain rails abroad or to secure their delivery.

Shortly after this, however, news reached Bolivia of the death of Mr. Vezin, head of the contracting firm, and the Bolivian Congress attempted to secure the nullification of the contract. The Vezin heir demanded 1,840,756 bolivianos for the liquidation of the contract. The Government objected to this sum as excessive, but agreed to pay 780,000 bolivianos in case certain specific claims of the Vezins were found justifiable. It was then proposed to make a physical valuation of the work already done as a basis for further proceedings. With this understanding the contract was formally abrogated late in 1919.

In accordance with a law of May 12, 1920, a contract was signed on June 16 of that year between the Bolivian Government and the firm of Lavenas, Poli & Co. for the completion of the work left unfinished by the Vezins. This Argentine company had acted as subcontractor under the Vezin contract and was thoroughly familiar with conditions on the route. At the time the Lavenas-Poli contract was made the Government expected to place a loan in the United States, part of the proceeds of which was to be applied to financing the work. However, the revolution of July interfered with the Government's plans in this connection and prevented a renewal of construction. Subsequently the contract with the Argentine firm was annulled for nonfulfillment.

The Government then entered into a contract with the Ulen Contracting Co. for the completion of the road. The company agreed to finance the undertaking by taking Bolivian Government 8 per cent bonds to the value of $7,000,000 at 87½. The contract provided that the contractors were to receive a fee of $1,000,000 as their compensation, and that the cost of construction and all other expenses were to be paid by the Government. In May, 1924, the line was opened to traffic from the Argentine boundary to Tupiza. It was then necessary for the Government to raise additional funds, and consequently $2,000,000 additional Bolivian bonds, $1,000,000 at 87½ per cent and $1,000,000 at 91½ per cent, were sold to raise funds to complete the road.

Work was continued on the new basis and the road was finished at a cost of approximately $10,000,000 on July 26, 1925, for the entire distance of 124 miles.

The road has officially been turned over to the Government, and is being operated by it. Villazon is located on the Bolivian side of the boundary line between Argentina and Bolivia. Directly across the river is La Quiaca, the rail head of the Argentine North Central Railway. This system has constructed a bridge across the river connecting La Quiaca with Villazon. Villazon was connected with Tupiza, a distance of 100 kilometers, in May, 1924. Atocha is the terminus of the Uyuni branch of the Bolivian Railroad Co., which was opened to traffic in February, 1913. This branch, 90 kilometers in length, has been leased to the Antofagasta (Chile) and Bolivia Railway Co., by which it is operated. With the completion of the final section, through traffic is now open between La Paz and Buenos Aires, and the Pan American railway system is now completed for more than half the length of the continent.

The administrator is Santiago Armayo; address, Ferrocarril Villazon-Atocha, Tupiza, Bolivia. The engineer who represented the Bolivian Government on the ground while the railway was being constructed is Carlos Aliaga Mariaca, Ingeniero Seccional de la Inspección Fiscal del F. C. Villazon-Atocha. The general manager in Bolivia of the Ulen Contracting Corporation is Frederick Hoit, La Paz, Bolivia.

Inasmuch as the road is government owned, all purchases are made by the Minister of Fomento (Promotion) and Communications of Bolivia.

Altitude.—The road runs from 9,500 feet to 13,300, the highest point on the road.

Gauge.—The gauge of the road is 1 meter.

Grade.—The maximum is 3 per cent, compensated on curves.

Curves.—The maximum curve radius is 82 meters.

Rails.—All rails are of Bessemer steel. Most of them were imported from Belgium, although some are of American manufacture. Rails are of 60 and 80 pounds.

Ties.—One hundred and five miles of the way are bedded with quebracho ties from Argentina, while 19 miles are bedded with Douglas fir from the United States. The quebracho ties are spaced 1,500 and the fir ties 18 to the kilometer.

Ballast.—Ballast is of stone and dirt.

Fuel.—Coal is used for fuel, although eventually the locomotives will be converted into oil burners. Electrification is impossible.

Signaling.—Telephone and telegraph are used for signaling.

Clearance.—The clearance limits of the road are 3.20 meters in width and 4.07 meters in height.

Tunnels.—The road has four tunnels in use; two of these are approximately 170 meters in length and two are 40 meters long. All four are south of Atocha.

Bridges.—The road has the following bridges, all with deck-plate girders: One with four 20-meter steel spans; 3 with three 20-meter steel spans; 5 with two 10-meter steel spans; 20 with one 10-meter steel span—a total of 29 large bridges. There are also various culverts and 1 and 2 meter vents.

As of May 1, 1926, the road had five locomotives in operation; three of these were American and two of German manufacture. The American locomotives are of the Mikado type, weighing 140 tons when loaded; they have 21-inch cylinders. The road also has 35 flat cars, all of which were made in the United States.

EMPRESA LUZ Y FUERZA ELÉCTRICA DE COCHABAMBA

This company operates two short, narrow-gauge roads—one extending from Cochabamba by way of the Punata Valley to Arani, a distance of 38½ miles, while the other goes by Quillacollo to Vinto. The first of these is operated by steam power, while the second is operated by electricity. In addition, the company holds concessions for the extension of the former line as far as Totora on the road to Santa Cruz, and for the prolongation of the Vinto line to Sipesipe. The construction of these lines was undertaken from the proceeds of a loan placed in London in 1910 by the Empresa Luz y Fuerza Eléctrica de Cochabamba for £300,000 at 6 per cent interest and 2 per cent annual amortization. By a law of January 6, 1910, the Government undertook to guarantee the interest. A subsequent law of February 15, 1910, extended the Government guaranty to include the 2 per cent annual amortization of the loan, but an arrangement was made whereby the light and power company agreed to meet this charge from the earnings of its other properties, consisting of a flour mill, tramways in Cochabamba, etc. Thus, while the Government is liable for the entire annual service of the debt, or £24,000, its annual appropriation for this purpose is put at £18,000, of which a part is supplied by the net revenues of the guaranteed lines.

Since the earnings of the railways and the yield of the special tax on the local production of beer and "muko" created for the purpose have been insufficient to meet the service of the loan, the Government has been compelled to make good its guaranty to a considerable degree. According to the annual report of the Minister of Public Works for 1923, the sum due the Government on this account by the enterprise is Bs.1,480,919 plus £6,400 advanced to meet the service of amortization. According to the London Stock Exchange sheet dated December 1, 1924, the amount of bonds then outstanding was £143,-260. The largest shareholder of the company is Señor Simon Patino, who holds 30,000 shares of stock out of a total of 50,318 shares.

Purchases for the road are made by the general manager, who should be addressed in care of Empresa Luz y Fuerza Eléctrica de Cochabamba, Cochabamba, Bolivia.

The latest information available on the road is for 1919, which shows that approximately 431,527 passengers and 12,424,435 kilos of freight were carried for the receipts of Bs.213,654 and Bs.84,475, respectively.

Wood and electricity are used as motive power. On the Arani line small German wood-burning engines are in use, while on the Vinto line electric locomotives are used. Because of the scarcity of wood, however, it is expected that in the very near future the Arani line will be electrified. The Vinto line is supplied with power from the company's power station at Incachaca. The present installation, which is of German manufacture, has a capacity of double the amount of current generated, while the water available at Incachaca could develop 4,000 horsepower. At this point a mountain stream has been canalized and led along a ridge until it falls 200 feet into the turbines at the power plant. This station not only furnishes current for the Vinto line but supplies power and light to the city of Cochabamba and operates the local tramway lines.

HUANCHACA DE BOLIVIA RAILWAY

This road was constructed from Uyuni to Pulcayo, a distance of 20 miles, with an extension to Huanchaca, a distance of 6½ miles, making a total length for the entire road of 26½ miles. The road is owned and operated by the Compañía Huanchaca de Bolivia, which owns and operates the Huanchaca mines. The line is used principally for carrying supplies to the mines and taking out ores for transshipment at Uyuni to the coast.

The maximum grade is 3.25 per cent, while the radius of the smallest curve on the road is 360 feet. There is one tunnel 2 miles in length. The company owns five locomotives, some old passenger coaches, and a number of freight cars.

Purchases for the road are made by the general manager of the Compañía Huanchaca de Bolivia, who should be addressed at Huanchaca.

LA PAZ-TO-YUNGAS RAILROAD (UNDER CONSTRUCTION)

The history of the La Paz to Yungas Railroad dates from November 17, 1914, when a law was passed by the Government authorizing the construction of a standard-gauge 4 foot 8½ inch electric tramway from La Paz to the "Provinces of the Yungas," with a view to extending the line to a navigable point on the River Beni. Construction was commenced in April, 1915, and the first section as far as Cumbre, a distance of 26 kilometers, was opened to traffic on October 20, 1919. The cost of construction for this section was around $37,195 per kilometer. Funds were inadequate to complete the entire stretch of road, so it became necessary to devise ways of raising additional sums. With this object various laws were passed. In 1917 a loan was placed through the New York banking firm of Chandler & Co. for the sum of $2,400,000 at an interest rate of 6 per cent with amortization of 2 per cent, making an annual service on the bonds of $192,000, which is payable semiannually. This loan yielded $2,160,000. In 1920 an effort was made to secure an additional loan from the United States, but negotiations were stopped by the revolution which occurred in July and by the expatriation of the Director General of Railways.

Very few lines anywhere have presented such difficulties as does the building of this transandine railway. In the 74 kilometers of the Unduavi Canyon above the Puente de Chupe the line falls 3,500 meters. Between kilometers 49 and 64, though the horizontal distance is less than 5 kilometers, the distance by the route of the railway is 15 kilometers, with a fall of 717 meters. For one section 22 kilometers of railway are needed to cover a distance of 10 kilometers in the air line and there is a drop of 1,500 meters. This necessitates the use of the longest stretch of 6 per cent grade on any line in the world. Below the gorge of Anasani, which begins at about kilometer 70, the grade will be reduced to 3 per cent, while the fall of the Tamampaya Valley below the Puente de Chupe (kilometer 106) is between 1½ and 2 per cent.

Not only are the mountain sides, along which the line must be built, extremely steep, but the character of the rock formation makes the building of a solid roadbed very difficult. Much of this formation consists of slate and shale, whose strata lie parallel to the slope of the mountain side, thus increasing the probability of slides. As a result masonry bulwarks have had to be put in over long stretches to keep the roadbed from slipping. In other places the gravelly composition of the ground makes it difficult to anchor the track. Added to these difficulties is a heavy and humid growth of vegetation, which is very hard to clear off and next to impossible to burn, even during the dry season.

By the middle of 1920 rails were laid almost to the Rinconada Camp (kilometer 35), and the preparation of the roadbed was under way as far as Yerabuenani (kilometer 62). It was proposed to have the rails laid as far as Pongo (kilometer 46) by the end of August, but this construction was not completed until 1923.

While there has been much discussion as to the exact route which the railway is to follow after leaving the gorge of the Unduavi, the town of Coripata has been fixed as the immediate objective of the line. The law of December 18, 1918, which prescribed this route, also provided that a branch should be extended on from Coripata to Coroico. In order to conciliate the interests of the Province of Sur Yungas, it is understood that another branch is to be built to Chulumani from the neighborhood of the bridge of Chupe, which is the geographical center of the entire region. The ultimate objective is the head of steam navigation on the River Beni, which may be placed at Rurrenabaque, about 218 miles from La Paz. There is a choice of three routes to the Beni, according as the line follows the valley of either the Coroico, the Tamampaya, or the La Paz. Whatever route is chosen for the purpose, the work of construction on this final stage of the line will be much easier than on the initial sections into the Yungas. On May 1, 1926, the line was opened to Unduavi, a distance of 54½ kilometers from La Paz. At the present time practically no construction work is being carried on.

The road at the present time is under the supervision of the Director General of the State Railways, who should be addressed in reference to purchases of material.

Altitude.—As previously stated, the grades on the road present a difficult engineering problem. No switchbacks or cog tracks are to be used, but the excessive differences in levels are to be overcome by means of compensated grades. The following table will show the distances:

Places	Distance from La Paz	Altitude	Places	Distance from La Paz	Altitude
	Kilometers	*Meters*		*Kilometers*	*Meters*
Cumbre (Abra de Huacuyo)	26½	4,640	Chaco	78	1,895
Rinconada	35	4,196	Puente Anasani	80	1,750
Pongo	46	3,630	Puente de Chupe	106	1,118
Cucuta	49	3,418	Coripata	126	1,674
San Felipe	62	2,720	Coroico	161	1,725
Yerabuenani	63½	2,592	Chulumani	131	1,730
Neque Jahuira	70	2,070	Rurrenabaque	350	---------

Fuel.—While the original concession called for the construction of electric tramway, coal-burning locomotives have been used on certain sections of the road that have been finished. On March 26, 1920, a contract was signed in New York between the Bolivian consul general and Maj. James P. Bradner for the necessary survey preliminary to the installation of electric motive power. The water supply along the road is excellent, while coal is very scarce; consequently the conversion of this line to electric power will undoubtedly take place in a short time.

Ties.—Ties used are of redwood.

At the present time the motive power and rolling stock of the road comprise two Shea locomotives purchased in 1917 at a cost of $19,000 each, as well as 21 cars of various kinds which were purchased in the United States.

MACHACAMARCA-UNCIA RAILWAY

This road was constructed under a concession granted to Simon I. Patino to construct a line running from Machacamarca to the Uncia tin mines. The road was constructed and opened to traffic, a distance of 37 miles, in 1920, since this time it has been extended an additional 23 miles, making an aggregate mileage on May 1, 1926, of 60 miles.

Purchases are made by Simon I. Patino, who should be addressed at Oruro, Bolivia.

Signaling is done by hand. In addition, the railway operates a telegraph and telephone system.

Seven first-class cars, five second-class cars, and two other cars are electrically lighted. Current is supplied by generators driven from car axles. The system used is manufactured by J. Stone & Co. (Ltd.), Deptford, London, S. E., and costs approximately $1,730 for a complete unit. The equipment varies according to the different types of coaches. For instance, storage batteries are of 16 volts of 150-ampere-hour capacity and of 24 volts of 250-ampere-hour capacity. From 7 to 13 lamps of from 16 to 24 volts are used. There are no fans in operation.

POTOSI-TO-SUCRE RAILWAY (UNDER CONSTRUCTION)

A concession for the construction of this railroad was granted on August 1, 1916. At that time the Bolivian Congress asked for proposals for the construction of a railroad running from Potosi to Sucre. The Government offered a 6 per cent guaranty for 20 years and, as security for the guaranty, the following resources: The sum of Bs.2,034,547 deposited in the Banco de la Nación, with interest on this sum; a tax of 1 boliviano on every metric quintal of foreign merchandise destined for the Departments of Chuquisaca and Potosi; and 100,000 bolivianos annually for 10 years, beginning in 1917.

Construction on the road commenced on November 26, 1916, and on June 30, 1918, the line was opened to traffic as far as the town of Betanzos, a distance of 35 kilometers. Up to this period the Government had turned over, for the construction of the line, 3,950,000 bolivianos, which was 150,000 more than the total yield of all the financial resources devoted to the project.

On October 5, 1918, a law was passed by the legislature authorizing the Government to place a loan for £1,000,000 with which to continue the construction of the line. The Government was unable to place this loan and likewise was unable to negotiate an internal loan. In the meantime three banks in the country agreed to advance the Government Bs.1,950,000 to carry on the work. Construction activities remained dormant for some time. On December 1, 1924, the Government passed a law authorizing the President to obtain a loan of £600,000 with which to continue the construction of the road. This loan was contracted with the Banco Anglo Sud-Americano and the banking house of Glyn, Mills & Co.

The bonds are dated January 1, 1924, and carry 8 per cent interest. The Government is to print the actual bonds, delivering in the meantime provisional bonds amounting to £600,000 to the bankers in London, who will immediately deposit London letters of credit, 90 days' sight, to that amount at the Banco Mercantil in La Paz.

The loan is to be paid off in five years and is guaranteed by the Bolivian Government, which will hypothecate 50 per cent of the tax on mining properties. This percentage of the tax is to be used exclusively in amortizing the loan, and the Government is not empowered to raise the tax. The loan contract was signed by the Bolivian Government, representatives of London bankers, and the bearer of the power of attorney of Simon Patino. The entire proceeds of the loan, with the exception of approximately £220,000, will be used for the completion of this road. It is expected that at least £300,000 additional will be required before the road can be finished and properly equipped. Under date of March 21, 1925, the Government authorized the Antofagasta (Chile) and Bolivia Railway Co. (Ltd.) to construct the road. On September 16, 1925, construction had reached kilometer 102, and the earthworks were constructed as far as kilometer 107.

The Government official in charge of the construction of this railroad is Señor Don J. B. Aramayo, Director General de Ferrocarriles, Ministerio de Fomento, Republic of Bolivia, La Paz, Bolivia.

The agreement of the Cabinet Council of March 21, 1925, reads as follows[2]:

Whereas, in the Council of Ministers, the proposition is presented by the Antofagasta (Chile) & Bolivia Railway Co. (Ltd.) to prosecute the construction of the Potosi-Sucre Railroad, and

Considering, that the Government of Bolivia proposes to complete the construction of the railway line between the city of Potosi and the capital, Sucre, the final studies of which are completed and the line itself laid as far as kilometer 97, the removal of earth being now in progress between kilometers 107 and 127, though interrupted by landslides in different parts.

The Supreme Government, desirous of completing this work in the shortest time possible, has agreed with the Antofagasta (Chile) & Bolivia Railway Co. (Ltd.), which hereinafter will be referred to as the "contractor" in the consummation of the following contract for the construction and exploitation of the line for the period during which the work goes on, the said contract being summarized in the following clauses:

I. The contractor, for the exclusive account of the Government, shall take in his charge the construction of the line mentioned, of single track, 1 meter wide.

If possible, the said construction shall follow the plans and studies already verified, and according to the types and standards established and approved by the Government on the lines constructed by the Bolivia Railway Co., and shall include the construction and equipment of the corresponding telegraph line, the contractor being obligated, for the account of the National Treasury, to furnish all material, of whatever nature, that may be or is needed for the construction in the conditions detailed hereinafter.

By the word "construction," used in the course of this contract, is meant all work and material in general, and the equipment and rolling stock necessary for the execution of the line itself and the telegraph line; further, it means the necessary elements for executing embankments, tunnels, bridges, and culverts, as regards both surface and underground construction, for buildings and their equipment, and for any other work; it includes also the rails, ties, ballast, telegraph material, and, lastly, all that the contractor might have to pay, administer, or do, according to the conditions of the present contract.

Any unit of rolling stock or construction plant that might become unusable by reason of accidents shall be replaced for the account of the construction.

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[2] The following translation, like numerous other translations in this book, has been made from the original foreign language. It is believed to be accurate and correct, but it is understood that the Bureau of Foreign and Domestic Commerce, in issuing this translation, assumes no responsibility for the accuracy, completeness, or correctness thereof.

II. It shall be left to the care of the contractor, and for the exclusive account of the Government to secure title over all ground for "the right of way," together with any other title necessary to any work inherently connected therewith, such as deviations, houses for the crews, station houses, water, etc.; the expropriations and payments therefor shall be made in the form in which any other legal indemnification is made, the contractor not being held responsible for damages that the construction may suffer as a result of involuntary delay in securing the titles or in proving the expropriations.

The contractor obligates himself to take forthwith the measures necessary for acquiring and expropriating the ground necessary to the construction, in order to avoid delay.

On its part, the Government pledges itself to facilitate the acquisition and expropriation of such ground through its agents and authorities.

III. As soon as possible, the contractor shall assume charge of the administration, traffic, technical, personnel, construction, bookkeeping, warehouses, telegraph, and other dependencies of the railroad; and the present administration shall, immediately upon the request of the contractor, transfer the entire line, including the road and works constructed, the rolling stock, all the construction material along with machinery, ironwork and tools, animals, cars, etc., including also the material, ironwork, and tools in possession of subcontractors, and both transfers shall be made by inventory, to be signed by the contractor and the representatives of the Government in quadruple copies of the same content, and, as soon as possible, there shall be a valuation of this inventory by agreement between the two parties, and it shall not devolve upon the contractor to restore the material destroyed by reason of the natural use thereof in the construction.

IV. While the rolling stock, necessary for the operation of the line, is being secured, the contractor is authorized to hire locomotives, cars, or other vehicles which he may deem necessary, in order that the construction may duly proceed. To that effect, the Government will approve any arrangement the contractor may effect with the Bolivia Railway Co. with regard to equipment, by modifying provisionally clause 11a of the lease-contract of December 28, 1908, between the Antofogasta (Chile) & Bolivia Railway Co. and the Bolivia Railway Co.

V. Purchase abroad of important material, such as rails, ties, bridges, etc., necessary to the construction of the line, shall be made in the following way:

The contractor shall call for bids in the principal markets for the supply of said materials according to the specifications previously approved by the Government.

These bids, which shall be kept in force for a period of 60 days reckoned from the date of the bids, shall be submitted as soon as possible for the approval of the Supreme Government, which, in agreement with the opinion of the General Railroad Administration, shall accept the most suitable within the period indicated.

The approval of the Government being secured, it shall give notice to the contractor, for his execution and completion, and shall transmit to him the necessary funds.

The Government is hereby entitled, if this is deemed advisable, to appoint, in the domicile of the bidder, a representative for cooperation in the examination and receiving of the material purchased.

VI. Through the medium of its bankers in Bolivia, the Government shall advance the funds to pay for the materials, ironwork, subcontractors, wages, freight charges, and port dues, and all other expenses incurred within the zone of the work or in any other countries of South America, in the following manner:

(*a*) The contractor shall not undertake any work while the corresponding funds have not been committed to him in accordance with the following provisions:

(*b*) Before the end of each month the contractor shall submit to the Supreme Government an estimate in Bolivian money of the funds computed as necessary to meet the expenses for the work within the country in the month following.

(*c*) In the same way he shall formulate another estimate for expenses to be met outside the country and in the appropriate currency.

Both this estimate and the one referred to in paragraph (*b*) shall be made as per instruction of the fiscal inspector of the work, so that the Government may direct its bankers to pay the estimated amounts to the order of the contractor before the 15th of each month.

(*d*) The accounts that the contractor pays in sterling money shall be converted for their payment into national (Bolivian) money at the exchange rate of the Bank of the Nation for sight exchange bills upon London for the 25th of each month.

VII. While the construction of the line is going on, the contractor shall exploit the sections already completed, in agreement with the General Railroad Administration and in the most suitable manner, so as not to interfere with the prosecution of the work, and he shall in the accounting books open an account under the heading "Exploitation of the traffic," charging the expenses and entering receipts monthly.

VIII. As the construction of the Potosi-Sucre line is of a purely State nature and the contractor executes a work for the State, it is understood that he is not obligated to pay any national, departmental, or municipal duties now existing or to be created, whatever their denomination or object, neither storage nor consular fees, etc., on materials he may import for the work, nor is he obligated to pay duty on provisions, drugs, or medicaments that he may have to dispense to those working on the line. Likewise, the funds he may deposit in the banks for investment in said construction and interest accumulating thereon shall pay no duty whatever.

IX. The contractor is further exempt from the payment of duty on any amounts of money he receives as compensation for the construction of the line or on any profit he may realize, except the duty of 1 per cent on guaranties destined to the percentage fund.

X. The Antofagasta (Chile) & Bolivia Railway Co. (Ltd.) shall collect and the contractor charge to the account of construction for transportation of all materials the work requires a fixed rate of 1 penny of English money per ton and per kilometer from Antofagasta or Mejillones to Potosi. Further, the Antofagasta (Chile) & Bolivia Railway Co. shall collect a fixed charge of 12 shillings per metric ton to cover all port and unloading expenses at Antofagasta or at Mejillones.

Transportation from Potosi to the place where the work proceeds shall be for the account of the same construction.

XI. The contractor, on taking charge of the construction of the railroad, as indicated in clause III, shall proceed with a strict measurement, classification, and evaluation of the work already done by preceding contractors whose liquidation is pending, and shall make an investigation of the accounts for payment, submitting his findings to the Supreme Government for the consequent purposes, it being understood that the contractor shall make no charge for this work either to the account of the construction or to the Government.

The Government shall pay to the contractor, for the administration of the construction of the line, a commission of 7½ per cent on the amount of work done, the commission to be paid monthly and in the respective proportion. The commission on the purchase of materials shall be remitted to the contractor at the time when payment for said material is to be effected.

These payments shall be made through first-class bills of exchange on London, 90 days' sight, and at the exchange rate at which the necessary bills may have been sold to secure the funds mentioned in this contract.

XII. The expenses that the contractor shall enter into the construction books, against the funds provided by the Supreme Government, shall be as follows:

(*a*) The wages and indispensable expenses of the technical fiscal inspector and his assistant, and of the fiscal control and bookkeeping commission attached to the Ministries of the Treasury and Public Works.

(*b*) The wages, food, and quarters of the engineers and their assistants, exclusively engaged in the direction and supervision immediately and constantly connected with the construction work.

(*c*) The wages, food, and quarters of the personnel of the special accounting office of the construction.

(*d*) The wages and salaries of the warehouse and stable attendants, mechanicians, and in general all employees and workmen exclusively engaged in the upkeep and care of the rolling stock and construction material, vehicles, automobiles, trucks, mules, etc.

(*e*) The amounts paid to subcontractors for the construction work pertaining to the line, excepting the amounts that the Government charges to said subcontractors for work done previous to the present contract.

(*f*) The value of the rolling stock and appurtenances of every kind of the permanent line, along with the bridges, plant, machinery, ironwork and tools, and any article necessary for the prosecution of the work of the line, including port charges and freight and insurance to destination, the cost of the material or article to include the value of said material or article conveyed to the place of the work, and the amounts paid in the purchase, transportation, insurance, and delivery of said material or article put down in its place.

(*g*) The cost for constructing buildings, houses, sleeping quarters, warehouses, offices, and provisional countinghouses necessary for lodging the Government personnel and the contractors and for the prosecution of the work, and, further, the cost of the preliminary work, such as wooden bridges, auxiliary roads, provisional detours, etc.

XIII. Through the medium of the General Direction, the Ministry of Public Works takes charge of the approval of plans, profiles, sketches, monthly pay certificates and commercial bills for material secured in the country, expense accounts and other bookkeeping documents, and the contractor shall not be responsible for any delay whatever caused by failure to approve said documents in proper time.

XIV. It is understood that the Supreme Government shall see to the rectification, recission, or cancellation of the certificates for work done by the preceding contractors.

As regards clause XI, which deals with the compensation to the contractor, it is understood that there shall not be included in the cost of the work those accounts paid out by the Supreme Government and liquidated on the day when the work is given in charge of the contractor.

For the proper prosecution of the work, the contractor obligates himself to maintain in effect the contracts already signed by the Supreme Government which the subcontractors may have fulfilled or are fulfilling with the provision that they do so in efficient manner, within the terms of execution, etc., that will insure the completion of the work satisfactorily.

XV. All expenses for indemnification in conformity with the law regarding accidents, as well as for premiums and indemnifications payable in accordance with the law concerning special guaranties for employees in commerce and industry, are for the account of construction.

XVI. The appointment of employees, their number and wages shall be submitted to the Government for its approval, which latter shall be given as soon as convenient, not to interfere with the work.

XVII. The contractor shall locate his principal office at a point convenient to the work and there keep the accounts of the construction, and the Supreme Government shall appoint its fiscal inspector, who shall examine monthly all expense drafts and accounts, verify their accuracy, or formulate any criticism he may think proper.

XVIII. In case the Government ceases to provide the funds necessary for any of the specified expenses, in the present contract, the contractor shall have the right to halt the work, and no responsibility shall attach to him; but the Government obligates itself to provide, for the construction referred to in this contract, the balance of the £600,000 that may result from the cancellation of the pending debts, it being understood that if the Government secures larger funds to complete the work, the present contract shall be regarded as in force until said line shall be completed.

XIX. Payment of indemnities legally proven for damages and prejudices to third parties and for causes arising from the construction shall be entered to the account of the work.

XX. Arrangements existing between the Antofagasta Railway and the Bolivia Railway Co. and the Potosi-Sucre Railway regarding the leasing of rolling stock and terminal facilities in the Potosi station of the Bolivia Railroad Co. shall remain in force.

XXI. The contractor shall take out an insurance policy against fire to insure the material, buildings, merchandise, and provisions, and the cost therefor shall be for the account of construction. In case of fire, the amount the insurance company pays shall be entered to the same account.

XXII. The contractor shall provide medical service for the personnel of workmen and employees, in accordance with the laws regarding accidents arising from work, and with the special guaranties regarding employees in commerce and industry, to be charged against construction.

XXIII. For the purposes of bookkeeping and as regards the conversion, to be made by the contractor in his books, of the expenses incurred in Bolivian money into sterling, the Government shall advise the contractor of the exchange rate on London at which it has sold the bills needed to provide the funds invested in this contract.

XXIV. For the purposes of the present contract, the law of obligatory saving shall not apply.

XXV. The Supreme Government shall be entitled to watch over the construction, cost of the work, and expenses that must be attended to by the contractor.

XXVI. The Supreme Government reserves to itself the right to denounce this contract within the legal forms for proven unfulfillment of any of the clauses on the part of the contractor.

XXVII. Any differences arising in regard to the execution and interpretation of the present contract shall be submitted to the Supreme Court of Justice, in accordance with the political constitution of the State.

Therefore, the 27 clauses contained in this memorandum stand approved; they shall be recorded in the notarial division of the Treasury Department, and the Government shall be represented in this transcription by Messrs. Claudio O. Barrios, Attorney General, and Carlos Zalles, Director of the Treasury.

For registration and communication to whom it may concern.

(Signed) B. SAAVEDRA.
E. DIEZ DE MEDINA.
A. FLORES.
J. PARAVICINI.
R. VILLANUEVA.
P. GUTIÉRREZ.
C. PAZ.

Certified correct: N. Muñoz O., chief official of public works.

COROCORO-TAREJRA RAILWAY

This railroad, 5 miles in length, was constructed in 1914 by the Bolivian Government to connect the Corocoro copper-mining district with Arica. Up till 1925 the road was operated by the Arica-La Paz Railway, in connection with its regular services. By an executive resolution, dated November 30, 1925, the road was turned over for operation on January 1, 1926, to the First Regiment of Engineers of the Bolivian Army. No reason was assigned for its transfer, but it is felt that the action is due to an effort by the Government to afford relief to the Corocoro United Copper Mines (Ltd.), at Corocoro. Purchases for the road are made by the Minister of Fomento (Promotion) and Communications of Bolivia.

COCHABAMBA-TO-SANTA CRUZ RAILWAY (PROPOSED)

On December 3, 1918, the Government passed a law which granted the Executive power to authorize a survey for the construction of a railway extending from Cochabamba to Santa Cruz. At the present time the only means of communication between these two cities is by mule back through mountainous regions, which requires a period of approximately two weeks. The construction of this road would necessitate a large amount of bridge building, which would be difficult and costly. It is estimated that the cost of the road would amount to approximately $26,000,000. On August 6, 1922, the Government called for tenders for the construction of this railroad in accordance with the studies made under the law of December 3, 1918.

At this time the studies had not been completed or approved and it was not until June, 1924, that the surveys were finished. Under the studies the road will run from the town of Cochabamba to Santa Cruz with a branch to Puerto Ichilo, a total distance of approximately 685 kilometers. Negotiations were carried on between Hans Grether, a German engineer representing the Bolivian Government and various financial houses in the United States, for the financing of this work. Mr. Grether died on October 27, 1925, and his successor has not yet been appointed. On November 18, 1925, the National Congress of Bolivia sanctioned a law for the flotation of a loan for the construction of this road. The following is a copy of this law:

ARTICLE 1. The executive power is hereby authorized to contract, through the issue of bonds or without them, a series of loans to be destined to the construction of the Cochabamba-Santa Cruz Railroad, on the basis of the final studies made by the commission presided over by the engineer, Dr. Hans Grether, which contemplated, besides the principal or main line, the branch to the Ichilo River.

ART. 2. The price of sale, rate of interest, amortization, and proceeds from such loans or credits shall be fixed by a special law.

ART. 3. These loans or credits shall be secured by the following resources:

(*a*) Those set aside by previous laws to the Cochabamba-Santa Cruz Railroad and which should not have been hypothecated to the loan of 1922.

(*b*) The contribution of £5,000 monthly, guaranteed to the Bolivian Railway Co., once it becomes free from present obligations.

(*c*) The contributions set aside for the Potosi-Sucre Railroad and the resources and securities allocated to the railroad loan and described in the decree of March 4, 1925, once they become free from present obligations and the railroad to the capital of the Republic is finished.

These resources do not include the 100,000 bolivianos a year contributed by the departmental treasuries of Chuquisaca and Potosi.

(*d*) The national taxes on real estate and salaries provided for the centennial by the law of January 15, 1925, are * * * set aside as a security for the Cochabamba-Santa Cruz Railroad, commencing on January 1, 1927, until they may be replaced by other taxes or by the revenues to be obtained from the exploitation of the zone affected by said railroad.

ART. 4. As security for these loans or credits, the following revenues are reserved:

(*a*) All revenues from the exploitation of the Cochabamba-Santa Cruz Railroad.

(*b*) All revenues from the Charana-La Paz Railroad from the date that the Republic takes over the aforesaid line.

ART. 5. The executive power is authorized to secure funds to be devoted to the conclusion of the Atocha-Villazon line and the Potosi-Sucre Railroad, under the same plan of loans and securities indicated in the foregoing articles.

ART. 6. To facilitate the negotiation of the new loans and hasten the construction of the Cochabamba-Santa Cruz Railroad, the executive power is authorized to convert and consolidate all former loans, provided that the contract for such loans allow it and that the new operations provide advantages over the amortization rates and interest in the former contracts.

Following is a memorandum of Jesse H. Whitaker, chairman of the Permanent Fiscal Commission, concerning the resources allocated to this proposed railroad:

The law first passed apparently provides for the following guaranties:

(*a*) Those destined by former laws to the Cochabamba-Santa Cruz Railroad and which have not been hypothecated to secure the loan of 1922—Bs.1,329,700. This amount is immediately available to serve as guaranty.

(*b*) The contribution of £5,000 monthly is guaranty of the payment of the interest on the first mortgage bonds of the Bolivian Railway Co., since these payments are free from the existing contract.

These monthly payments will end with the year 1926; but as they would mean nothing more than the inclusion in the national budget of £5,000 per month, they naturally would not be *special* income and should be omitted.

(*c*) The contributions in guaranty of the Potosi-Sucre Railroad and the resources and guaranties mentioned in the decree of March 4, 1925, once free from the existing contract.

The annual contributions of Bs.100,000 by the Departments of Chuquisaca and Potosi not to be included.

The special income allocated to the Potosi-Sucre Railroad (excluding the quota from Chuquisaca and Potosi, and 30 per cent of the tobacco participation which is pledged to secure the loan of 1922) was Bs.1,076,951.

From the foregoing provision (*c*) of the law first passed it would appear that this special income was to constitute a part of the guaranty for the Cochabamba-Santa Cruz Railroad. However, by article 5 of the law, "the executive power is authorized to obtain funds for the conclusion of the work on the Atocha-Villazon and Potosi-Sucre railroads, under the same plan of loans and guaranties indicated in the foregoing articles." Therefore, the inclusion among the special guaranties of the Potosi-Sucre income apparently does not mean that they are to be diverted from the Potosi-Sucre guaranties to the Cochabamba-Santa Cruz guaranties, but to be used only in case a similar loan should be made for account of the Potosi-Sucre Railroad. These same special guaranties of the Potosi-Sucre would automatically become a part of the revenues pledged under the trust contract of May 31, 1922, if the $4,000,000 Potosi-Sucre bonds should be authenticated and delivered by the Equitable Trust Co., trustee, and would thus be eliminated from the provisions of the law just passed.

The resources and guaranties mentioned in the decree of March 4, 1925, are those now securing the Patino loan of £600,000—that is, the amount of the tax on mining profits paid by the Patino Mines and Enterprises necessary to pay the service and amortization on the loan, which is about £74,000 per annum. As this loan for five years has four more years to run, this guaranty would not be available until 1930. The question would then arise that an attempted first lien on same would be in conflict with the trust contract of May 31, 1922, which creates a first lien on this income in favor of the bonds of 1922, which same conflict now exists with reference to the Patino loan.

(*d*) The national taxes on real estate and salaries which have been imposed by law for the centennial, to be continued in force and applied to the guaranty of the Cochabamba-Santa Cruz Railroad, from January 1, 1927, which may be substituted by other taxes, or by those which may be created from the industrial development of the zone of influence of said railroad.

An estimate of the income from those taxes for 1925 is: 1 per cent on salaries, Bs.315,000; one-half of 1 per cent on value of real estate, Bs.495,000; total, Bs.810,000. This amount is probably excessive. It would be safer to place the estimate for 1927 and subsequent years at Bs.700,000.

The law provides by article 4 that as subsidiary guaranties there shall be reserved:

(*a*) All classes of income derived from the operation of the Cochabamba-Santa Cruz Railroad;

(*b*) All classes of income derived from the Charana-La Paz Railroad (this being the Bolivian section of the Arica-La Paz Railroad) from the date of coming into possession of said railroad by the Republic. (This date is fixed at May 13, 1928.) It is said on the street that this road will be worth to the Government about £50,000 per annum. This is the only estimate that can be made.

From the foregoing (omitting the special revenues for the Potosi-Sucre, as above explained) the situation is:

	Bolivianos
Cochabamba-Santa Cruz revenues, immediately available as guaranty	1,300,000
Additional amounts available in the future—	
1926, excess of export duties on rubber over collections in 1925, also similar excess on importations through the customhouses of Cobija, Villa Bella, and Puerto Suarez, say	500,000
(This income not included in law proposed by the executive, but proposed by congressional decree. Whether included in the law as passed, can not now say.)	
1927, income and real estate taxes	700,000
1930, amounts now paid account Patino loan (not included).	
	2,500,000

	Bolivianos
Subsidiary guaranties: All income from the road, 1928, Charana-La Paz Railroad, say	600,000
Total	3,100,000
Estimated amount of income allocated by special laws to the construction of the Cochabamba-Santa Cruz Railroad, excluding the income pledged to secure the bonds of 1922, marked (x):	
(*a*) Tax of 1 boliviano per metric quintal on merchandise imported to the States of Cochabamba, Santa Cruz, and Oruro	450,000
(*b*) Tax on national alcohols and brandies in the States of Cochabamba, Santa Cruz, and El Beni	650,000
(*c*) 30 per cent customs duties on the importation of wines, liquors, and beverages in general, Bs.180,000 (x).	
(*d*) Annual quota of the national treasury, Bs.100,000 (omitted).	
(*e*) Annual tax of one-half centavo per hectare on wild lands	100,000
(*f*) Consolidation (titles to) of rubber lands	100,000
(*g*) 40 per cent of participation of Government in the tobacco monopoly, Bs.240,000 (x).	
(*h*) 30 per cent of the participation returns and reimbursements, in favor of the Government as provided by the railroad contract approved by law of November 27, 1906.	
(*i*) Dividends on 2,977 shares of the Banco de la Nación Boliviano	29,770
Total	1,329,770

SANTA CRUZ-TO-YACUIBA RAILWAY (PROPOSED)

The purpose of providing the city of Santa Cruz, of 25,000 people, with railway outlets to the Pacific coast and via Argentina to the Atlantic, has long been considered. As far back as 1911 a concession was granted to a British firm to build such a line, to be known as the Eastern Railway of Bolivia. This firm, however, made no effort to construct the road, and the concession was taken over by the Farquhar Syndicate, which likewise failed to construct any part of the line.

On January 6, 1922, Dr. Horacio Carrillo, representing the Argentine Government, entered into an agreement with the Bolivian Government whereby the former undertook to construct a line from the northern frontier of Argentina, at Yacuiba, north to Santa Cruz. This agreement was revised on November 16, 1923, when the following convention was drawn up (this convention was subject to the approval of both the Bolivian and Argentine Congresses):

In the city of La Paz, November 14, 1923, meeting in the office of the Minister for Foreign Affairs of the Republic of Bolivia, His Excellency Dr. Horacio Carrillo, envoy extraordinary and minister plenipotentiary of the Argentine Republic, and His Excellency Dr. Román Paz, Minister for Foreign Affairs, after considering the modifications introduced by the Most Excellent Argentine Government for the railroad-construction convention signed January 6, 1922, for the extension of the North Central Argentine Railroad from Yacuiba to Santa Cruz, and those formulated by the Most Excellent Government of Bolivia, agreed to modify said convention in the following terms:

ARTICLE 1. The Government of the Argentine Republic will order the carrying out of the necessary studies for the extension of the North Central Railroad from Yacuiba or its vicinity to the city of Santa Cruz de la Sierra, obligating itself to begin them within the term of a year from the ratification of this convention.

ART. 2. The Government of Bolivia obligates itself to cooperate in the carrying out of these studies by providing, on its own account, such technical personnel as may be deemed necessary—the mode of operation of the mixed commission, thus constituted, to be determined in due time.

Art. 3. When the final studies have been approved by both parties there shall be fixed, by common accord, the time within which the construction of the trunk line and its branches shall be commenced and completed—the Argentine Government to proceed, on its own account or through private contractors, with the construction of the lines, the Bolivian Government not having to make any expenditure.

Art. 4. The Bolivian Government shall have the right, at any time after the expiration of the time limits fixed according to article 3, for the completion of the trunk line, to acquire the property of the line or lines which are referred to in this convention, paying the total value of their cost, with an annual interest of 6 per cent on the capital invested; but in so far as said value shall not have been repaid the Argentine Government shall retain the administration and management of the lines on the same conditions as might apply to a private enterprise and without prejudice to the inherent rights of Bolivian sovereignty.

The Bolivian Government shall have also at any time the right to pay back part of the capital employed, and in such case shall participate in the liquid profits of the line in proportion to its respective share.

Art. 5. The tariffs of the railroad shall be established by the Argentine Government or the enterprise which represents it, and shall not be put into effect at any time without the Bolivian Government's agreeing to them.

Transportation on Government account within Bolivian territory shall enjoy a reduction of 50 per cent from the ordinary tariffs. This privilege, as referring to the passage of persons, shall be preserved in favor of the Argentine Government, when the line passes into the possession of Bolivia, for the term of 20 years. Moreover, the lines shall carry free, with equal reciprocity, the mail pouches of each Government that may be dispatched by the post offices, according free passage to those in charge of such pouches, as well as free passage for judicial or police functionaries, who shall proceed to exercise diligence in the carrying out of their mission. The term of 20 years stipulated for the enjoyment of this privilege may be limited to a less time in another convention when the Government of Bolivia is ready to acquire the property of the unfinished line.

Art. 6. A special convention, authorized by the executive powers of both Governments, shall fix the schedule of tariffs for the transportation of raw materials and products worked up from such materials by national industries, on the railroad lines of the Argentine and Bolivian Governments.

Art. 7. The railroad agreed upon will be constructed by sections, and, if there are not grave inconveniences, the sections completed may be opened to traffic successively, it being required of both countries to give, through their functionaries and employees, all the facilities necessary for the most rapid and perfect construction of the line, which shall be carried out within the term which both Governments establish, as is determined in article 3, the work being due to begin within a term of two years from the approval of the completed studies of the principal line or of its branches, there being enforced for such branches conditions the same as for the trunk line from the day on which they are agreed upon by both Governments.

Art. 8. The Government of Bolivia will cede gratuitously Government lands (where the line may cross them) which may be indispensable for the construction of the right of way. From such lands there may be removed materials required for the construction—also without compensation—and, moreover, there shall be free use of waters which private parties do not own or have rights in, and which also may be necessary for the work on the line and the exploitation of the railroad.

Art. 9. Government lands suitable for colonization within the zone of influence of the railroad will be reserved by the Government of Bolivia for colonization by the railroad enterprise—in a form and on conditions to be agreed upon in due time—on intercession by the executive powers of Bolivia and Argentina.

Art. 10. The Government of Bolivia pledges itself also to facilitate the passage of laws providing for the expropriation of lands which are outside of the ownership of the State and which may be required by the railroad, and it shall fix the cost thereof. It will afford, equally, facilities for the temporary occupation of lands and the establishment of all the administrative services that may be necessary for the construction and exploitation of the railroad, such as the closing of lands contiguous to the right of way, the taking out of materials indispensable to the railroad, and the prohibition of the execution of any works at less than a certain distance from the lines, etc.

ART. 11. No work will be impeded, retarded, or rendered difficult for the railroad or its accessories by reason of, or during the course of administrative or judicial proceedings necessary to determine the expropriations or the services that may be declared of public utility.

ART. 12. The materials necessary for the construction and exploitation of the railroad shall be free of all entry duty, national, departmental, or municipal, and the same shall apply to provisions, clothing, and household goods which, during the construction of the railroad, shall be introduced for the maintenance or use of the employees and laborers in conformity with the specifications which shall be formulated in common accord.

ART. 13. The railroad line and the properties, real or personal, appertaining to it shall be exempt from all taxes, ordinary and extraordinary, during the time that they are in the possession of the Argentine Government.

ART. 14. For the use of the railroad the Bolivian Government shall place at its disposal fuel from the Government lands which the line may cross, and liquid combustibles at cost price, or as the Government shall have acquired them, in accordance with the laws and contracts which it may conclude or has concluded in the same region with private companies.

ART. 15. The line shall be accorded the privilege of a zone double that which is set forth in the railway law of Bolivia, and the Argentine Government shall have preference to build and exploit, within the general stipulations of this convention, the branches of the trunk line which may extend to Sucre, Cochabamba, or wherever both Governments may agree is convenient. This privilege of preference shall lapse, naturally, when the Government of Bolivia acquires the property of the line in conformity with the provisions of article 4.

ART. 16. There is included in this convention, as a supplementary work, the line to Tarija, authorized by the Bolivian law of December 5, 1906, forming a branch from the Yacuiba-Santa Cruz line, as the technical surveys may render advisable.

ART. 17. This convention shall lapse if within the term of four years from the ratification by both countries the work on the construction of the principal line has not been officially begun, or, if commenced, it is stopped for more than two years—a time which may be extended by common accord.

ART. 18. The characteristics and technical conditions which shall be followed in the construction and exploitation of the line shall be the same as are in effect in the Argentine territory for the State railways (the effort being made to reconcile them with those established for the Bolivian State railways), and shall not be modified at any time by the Government of Bolivia until that Government has taken charge of all the line and of the branches, if any.

ART. 19. If, in the application of the present agreement, discrepancies of a technical character arise which can not be settled directly, they shall be submitted to the solution of arbitration. In this case there shall be designated two technical experts, one for each party, in order that they may decide the discrepancy. If they are not able to arrive at a settlement of the conflict, both will designate of common accord a third, whose decision shall be definite and unappealable.

ART. 20. This convention is approved by the Argentine and Bolivian Governments and will be submitted for the consideration of the legislative chambers of both countries.

In certification of which the plenipotentiaries of the Argentine Republic signed the present copy and have put thereon their respective seals.

(Signed) HORACIO CARRILLO.
ROMÁN PAZ.

SANTA CRUZ-TO-PARAGUAY RIVER RAILWAY SCHEMES

There have been several projects for giving the Santa Cruz region a railway outlet to the Paraguay River. In 1889 the Bolivian Government received proposals from Perry, Cutbill, DeLungo & Co. (Ltd.) to construct railways from Puerto Pacheco to Sucre and from the Laguna de Gaiba into the Itenez country. No action resulted from these proposals. In 1900 a Belgian company, known at L'Africaine, presented proposals for a line from Bahia Negra, on which Puerto Pacheco is located, to Santa Cruz. The cost was to be about $12,000,000, and the proposals included a scheme for the development of eastern Bolivia. The concession granted to this company expired in 1914. Similar proposals had been made in the meantime by Italo-Argentine interests under the name of Sindicato Fomento del Oriente Boliviano. Proposals were also made by the Bolivian Development & Colonization Co. a branch of the Farquhar Syndicate, for a railroad from the interior of Bolivia to Puerto Suarez or Bahia Negra, and these were accepted by the Bolivian Government in August, 1911. However, this concession, which also comprehended a grant of 1,000 square leagues of State lands, has expired, and there is at present no concession in the field. In 1919 certain Brazilian interests made overtures to the Bolivian Government for the prolongation of the Northwestern Railway of Brazil from Porto Esperanca, its present terminus, by way of Corumba and Puerto Suarez, to Santa Cruz. Construction of a line across eastern Bolivia should be comparatively easy, as grades would be negligible; in no part would there be required cuts or fills of more than 16 feet in depth.

Various boundary difficulties have arisen on occasions whenever construction on the proposed roads has been contemplated. Most of the differences were based on the terms of the treaty of 1867 and the Petropolis treaty of November 16, 1908. On September 10, 1925, these differences apparently had been "ironed out" by the signing of four protocols, simultaneously, at La Paz and Rio de Janeiro. The settlement, as referred to in a telegraphic dispatch to La Prensa on September 10, 1925, is as follows:

> Those differences referred to the demarcation of the dividing line between the Arroyo Bahia and the River Riparran, to the distribution of the islands of the Rivers Madera and Mamore, and to the manner in which the stipulations of the last treaty relating to the connecting of the two countries by rail were to be carried out.
>
> In view of the geographic conditions of Bolivia, the last-mentioned point is particularly important, it having been stipulated by that agreement that said line should extend from San Antonio upon the Madera to Guayaramirin on the Mamore and from the latter to Villa Bella, £2,000,000 to be invested in the construction of a bridge over the first of the rivers named. Several difficulties impeded the fulfillment of the last conditions. In 1910 the branch line from the Mamore to Villa Bella was replaced by mutual consent by the line from the "cachuela" of Palo Grande to that of Esperanza, which was altered a few years afterwards until, in 1919, the Bolivian representative, Dr. Jose Carrasco, proposed to the Brazilian Government that said line should be given up, it being extremely expensive and difficult to work, the £2,000,000 to be devoted instead to the construction of a railway line, which, starting from the height of Corumba, would end in Santa Cruz de la Sierra.
>
> Although that last proposal remained in suspense when the Bolivian diplomatist left Brazil a short time ago, the Itamaraty Government displayed the greatest interest in it and intrusted to the distinguished Brazilian scientist, Señor Estanislao Bousquet, who is now the president of the Polytechnic Institute, the control of the studies which have been made since then (on the spot) of the conditions which would govern the proposed line for uniting the railway systems of Brazil and Bolivia, thus opening in that region a direct way of communication between the Atlantic and the Pacific.
>
> The Transcontinental Railway Commission, under the leadership of the engineer named, has, in conjunction with a medical delegation from the Osvaldo Cruz Institute, made various studies and taken observations in the region alluded to, these relating to its geographical, topographical, sanitary, and other conditions, and their results will be published shortly, while, moreover, the most economical and advantageous route for the new line to follow has been

indicated, which line, according to Engineer Bousquet, after starting from the terminal point in Brazilian territory, should enter Bolivia 35 kilometers to the north of Puerto Suarez, passing through San Juan and Santa Ana before reaching Santa Cruz de la Sierra.

The line, the total length of which would be 690 kilometers, will pass through a very barren section. A short time ago objections were raised against the former on the ground of the scant importance of the towns through which it would pass and the nature of the ground, which it was alleged would make the line three times as costly as it should be. Another scheme also exists, that being the one put forward by the Bolivian engineer, Sr. Mendez Arce, which advises the Charagua route as that most suitable for the undertaking in question.

One of the protocols which has recently been signed in Rio de Janeiro approves of the investment of the £2,000,000, the original object of which has already been mentioned above, in the construction of the line to Santa Cruz de la Sierra. It is thought that the route decided upon is the one indicated by the head of the Transcontinental Railway Commission as being that regarded by both parties as the most advantageous and convenient.

COCHABAMBA-TO-EL BENI RAILWAY (PROPOSED)

Some time ago a concession was granted to Señor Simon Patino for the construction of a railway to connect the plateau of Cochabamba with some point on the upper Mamore Basin. There has been a decided lack of agreement as to the route to be followed. One suggested route would terminate at the junction of the Chimore and the Ichilo, while an alternative route would follow the Rio Isoboro, along which the concessionaire has vast holdings of land, to a point where the river is navigable for steamers. Construction by either route would entail an enormous outlay of money, as railway building in both the mountain region and the lowlands, which are inundated for several months in the year, would be extremely difficult and costly. Señor Patino's concession, after several previous extensions, was renewed for another six months early in 1920, but the chances are small that work will be undertaken under this concession. A railway to the Beni would furnish a much-needed connection between the highland region of Cochabamba and the rich but undeveloped plains country to the northeast, which now finds its most practicable outlet through the Amazon, but the problem of financing such a line constitutes a most serious obstacle to its construction.

GUAJARAMIRIN-RIBERALTA RAILWAY (PROPOSED)

Under a law of December 4, 1911, a concession was granted to the Madeira-Mamore Railway Co., in accordance with the terms of the treaty of Petropolis of 1903, for the construction of a line from Guajaramirin to Riberalta. This proposed road would amount to the extension of the Madeira-Mamore Railway across the Mamore River and into Bolivian territory as far as Riberalta, at the forks of the Beni and the Madre de Dios Rivers. The total distance between these two points is 186 miles. Work was abandoned shortly after the concession was received, and in recent years no action has been taken to revive it.

IQUIQUE-TO-ORURO RAILWAY (PROPOSED)

The history of this road dates to more than 40 years ago, when the distinguished engineer, Don Aurelio Lastarria, made a survey of the entire zone where this railroad is to be located. A few years later other engineers connected with the General Administration of Public Works again surveyed the same zone, and all reports agreed in considering this road to be feasible. No work was ever undertaken, and the project was dropped. In 1922 it was again revived and plans for the construction of the line were published in the papers. The road will open up interior territory and afford a direct outlet to the sea. The right of way is much less difficult to run than on the other lines from interior points to the Chilean coast. It is estimated that the road will be approximately 350 miles in length.

JULIACA (PERU)-TO-LA PAZ RAILWAY (PROPOSED)

The construction of this railway has long been contemplated by the Southern Peruvian Railway, but no real work was ever begun. The proposal of the Peruvian and Bolivian Governments to construct this road from Juliaca in Peru by way of Ninantaya around the northeastern side of Lake Titicaca to La Paz has eliminated the Southern Peruvian Railway from its construction. The proposed road is through the heart of the Cordillera Real, and the construction will be so heavy that it is impossible at this time to calculate the cost. The proposed railroad known as the Desaguadero Route, from Puno to Guaqui, would cost approximately 80 per cent less to construct.

In this connection a bill has been presented to the Bolivian Congress for the construction of this road. A copy of this bill is as follows:

> Whereas the Peruvian Congress has sanctioned a law authorizing the construction of an international railway from the port of Puno to that of Desaguadero [be it resolved, therefore]—
>
> That the opinion of Bolivia is favorable to this project of the public powers of Peru, which favors the route Alto La Paz-Ninantaya-Juliaca;
>
> That in this respect it is necessary to consult the economic convenience of both nations;
>
> That reasons of diverse nature make it advisable to prefer the route east of Lake Titicaca, in order that the agricultural and cattle industries of the Provinces of Andes, Omasuyos, Larecaja, Camacho, Munecas, and Caupolican, in Bolivia, and Huancane, Sandia, Azangaro, Lampa, Ayaviri, and Carabaya, in Peru, may be benefited;
>
> That, furthermore, * * * the adoption of this route would insure a revenue capable of securing the capital invested in the work;
>
> *Decrees:*
>
> ARTICLE 1. The executive power is authorized to initiate at once, with the Government of Peru, negotiations to construct an international railroad.
>
> ART. 2. During said negotiations attention must be given to the best means of constituting a mixed commission of engineers, to carry on a comparative study of the route most convenient and feasible for both nations.
>
> ART. 3. Thereupon, the executive power is authorized to contract a foreign loan or to carry out any financial operations to effect the aspirations of both countries.
>
> ART. 4. In this respect the executive power shall conform itself to the prescriptions contained in the general act on railways of October 3, 1910, either by calling for bids for the construction or by carrying it out on its own account.
>
> LA PAZ, *September 12, 1925.*

COLOMBIA

GENERAL FEATURES OF COUNTRY

Colombia, the sixth largest country in South America, lying in the northwestern part of the continent, occupies an area estimated at 495,522 square miles and has a coast line of 465 miles on the Pacific Ocean and 640 miles on the Caribbean Sea.

The prominent topographical features of Colombia are: (1) The Andean Mountain system, divided into three main ranges running from north to south and united at the boundary with Ecuador; these ranges are known as the Western, Central, and Eastern Cordilleras. (2) The high group of mountains in the northeastern part of the country, lying between the Goajira Peninsula and the Magdalena River Valley and known as the Sierra Nevada Range. (3) The high table-land of Bogota, in the eastern-central part of the country along the western side of the Eastern Cordillera. (4) The great llanos or plains of the southeastern part of the country, which extend from the line of the Eastern Cordillera to the east, southeast, and south, and comprise the watersheds of the Orinoco and Amazon Rivers, being in area much larger than the mountainous part of the country where most of the people live.

The mountains are the dominating factor, affecting all conditions of life and commerce, and making transportation extremely difficult and costly. They have divided the country into several regions, each one different from the others in respect to climate, commerce, racial characteristics, and transportation.

Colombia is well supplied with inland waterways, the largest of which is the Magdalena River. In addition there are the Cauca, San Jorge, Carare, Sogamoso, Lebrija, Cesar, Sinu, Atrato, San Juan, and Patia Rivers, all of which aid inland transportation.

Good roads are few and have very little effect on transportation conditions.

On December 31, 1925, there were approximately 1,800 kilometers of railways in operation. This amount was made up of 908 kilometers of Government, 385 kilometers of Department, and 523 kilometers of privately owned and operated track.

The above brief topographical survey indicates that transportation facilities in Colombia are poor and are afforded mostly by the inland waterways system. The main problem at the present time is to give inland districts access to the coast, as practically all traffic in the country is for export or import only. The intersectional traffic movement is limited. The development of the proposed system will afford accessibility to these inland districts, but it is uncertain whether there will be sufficient traffic to operate the system profitably.

Trade Promotion Series No. 39

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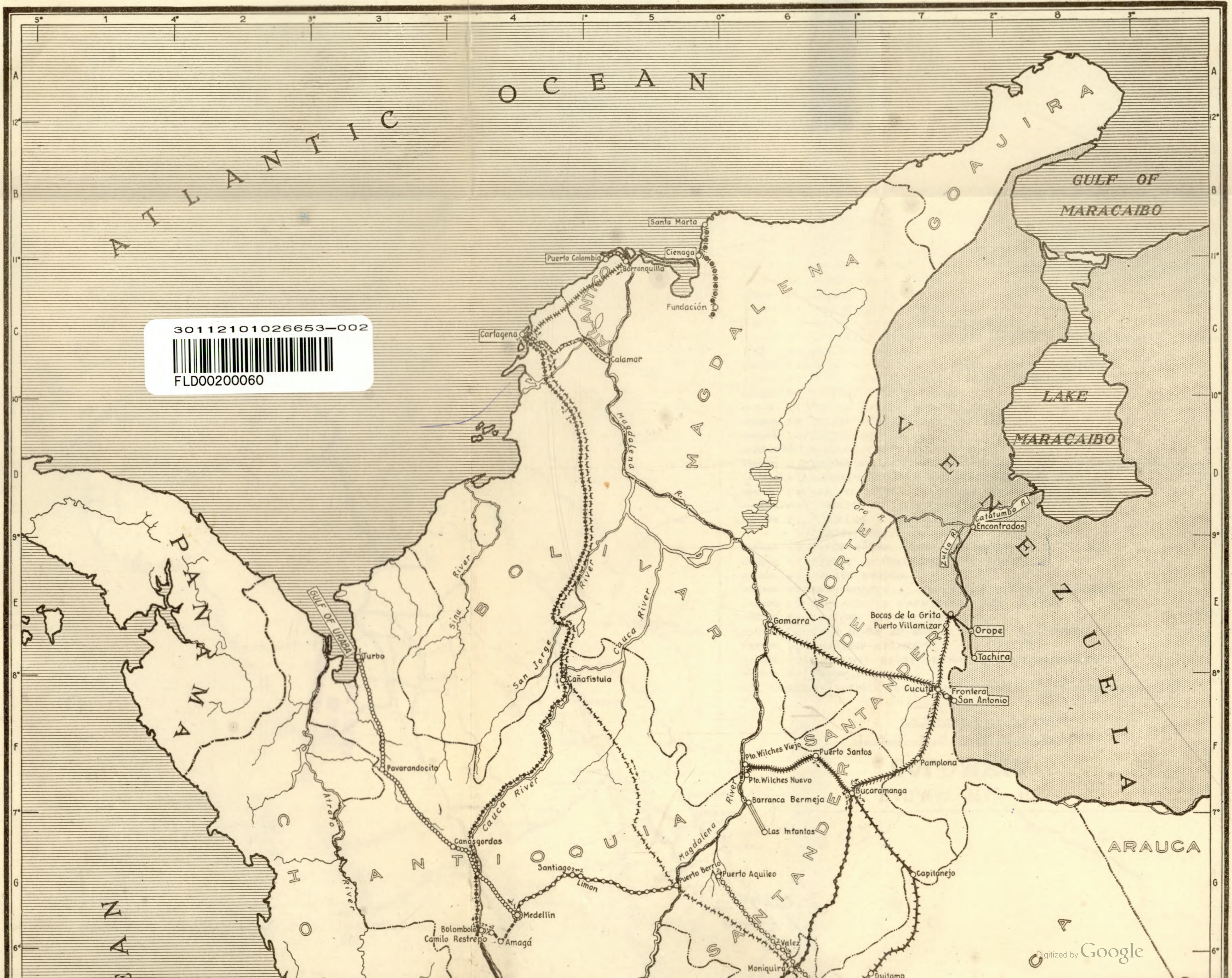

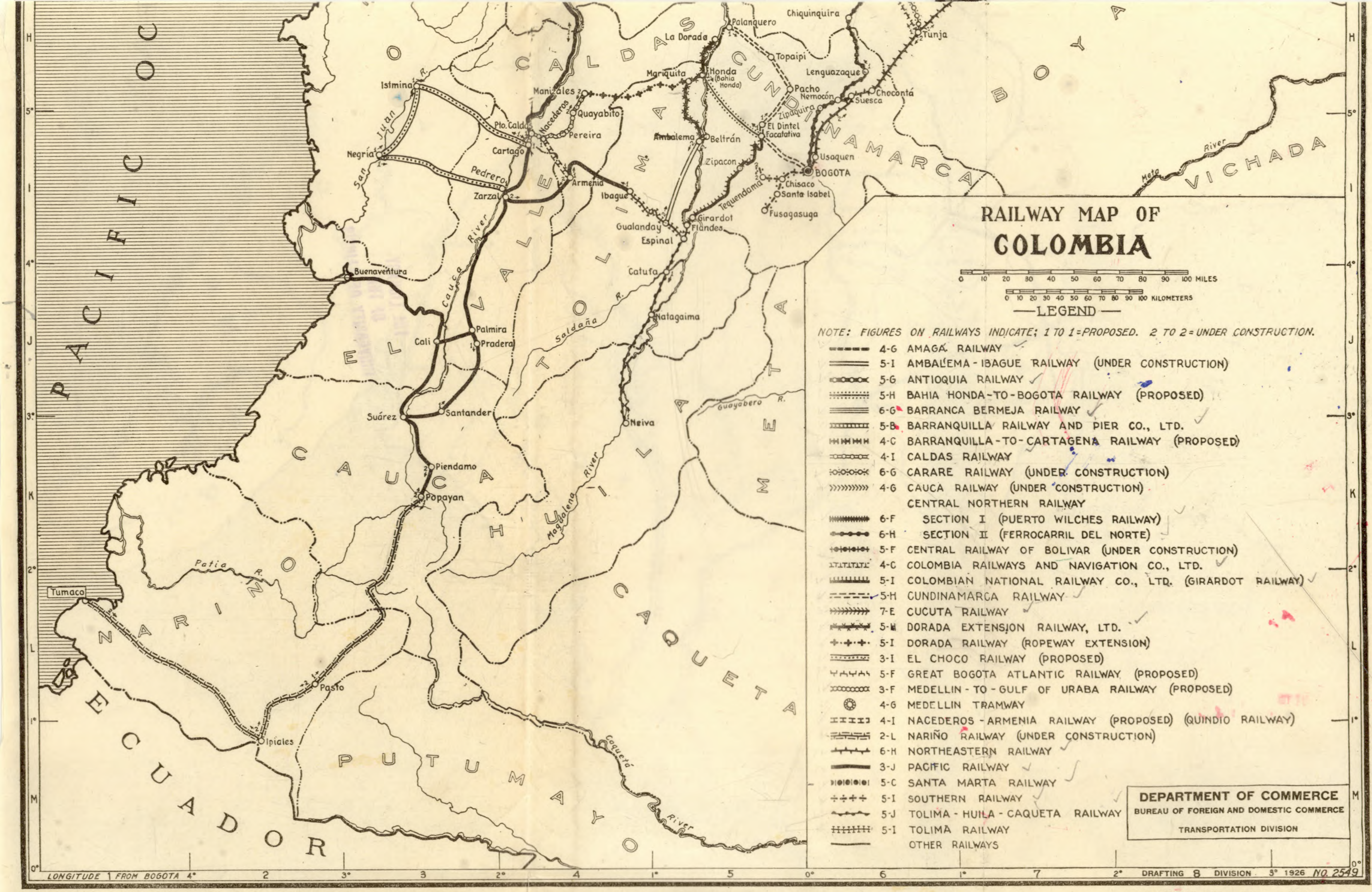
RAILWAY MAP OF
COLOMBIA
0 10 20 30 40 50 60 70 80 90 100 MILES
0 10 20 30 40 50 60 70 80 90 100 KILOMETERS
—LEGEND—
NOTE: FIGURES ON RAILWAYS INDICATE; 1 TO 1=PROPOSED. 2 TO 2=UNDER CONSTRUCTION.
4-G AMAGA RAILWAY
5-I AMBALEMA-IBAGUE RAILWAY (UNDER CONSTRUCTION)
5-G ANTIOQUIA RAILWAY
5-H BAHIA HONDA-TO-BOGOTA RAILWAY (PROPOSED)
6-G BARRANCA BERMEJA RAILWAY
5-B BARRANQUILLA RAILWAY AND PIER CO., LTD.
4-C BARRANQUILLA-TO-CARTAGENA RAILWAY (PROPOSED)
4-I CALDAS RAILWAY
6-G CARARE RAILWAY (UNDER CONSTRUCTION)
4-G CAUCA RAILWAY (UNDER CONSTRUCTION)
CENTRAL NORTHERN RAILWAY
6-F SECTION I (PUERTO WILCHES RAILWAY)
6-H SECTION II (FERROCARRIL DEL NORTE)
5-F CENTRAL RAILWAY OF BOLIVAR (UNDER CONSTRUCTION)
4-C COLOMBIA RAILWAYS AND NAVIGATION CO., LTD.
5-I COLOMBIAN NATIONAL RAILWAY CO., LTD. (GIRARDOT RAILWAY)
5-H CUNDINAMARCA RAILWAY
7-E CUCUTA RAILWAY
5-H DORADA EXTENSION RAILWAY, LTD.
5-I DORADA RAILWAY (ROPEWAY EXTENSION)
3-I EL CHOCO RAILWAY (PROPOSED)
5-F GREAT BOGOTA ATLANTIC RAILWAY (PROPOSED)
3-F MEDELLIN-TO-GULF OF URABA RAILWAY (PROPOSED)
4-G MEDELLIN TRAMWAY
4-I NACEDEROS-ARMENIA RAILWAY (PROPOSED) (QUINDIO RAILWAY)
2-L NARIÑO RAILWAY (UNDER CONSTRUCTION)
6-H NORTHEASTERN RAILWAY
3-J PACIFIC RAILWAY
5-C SANTA MARTA RAILWAY
5-I SOUTHERN RAILWAY
5-J TOLIMA-HUILA-CAQUETA RAILWAY
5-I TOLIMA RAILWAY
OTHER RAILWAYS
DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE
TRANSPORTATION DIVISION
DRAFTING DIVISION 3° 1926 NO. 2549
LONGITUDE FROM BOGOTA
PACIFIC OCEAN
ECUADOR
CALDAS
CUNDINAMARCA
BOYACA
VICHADA
EL VALLE
TOLIMA
HUILA
CAUCA
NARIÑO
CAQUETA
PUTUMAYO
META
Chiquinquira
Palanquero
Tunja
La Dorada
Topaipi
Mariquita
Honda (Bahia Honda)
Lenguazaque
Istmina
Manizales
Pacho
Nemocón
Chocontá
Suesca
Quayabito
Zipaquira
Pto. Caldas
Nacederos
Pereira
El Dintel
Facatativa
Ambalema
Beltrán
Negria
Cartago
Usaquen
Zipacon
BOGOTA
Pedrero
Armenia
Chisaco
Santa Isabel
Zarzal
Ibague
Tequendama
Fusagasuga
Girardot
Flandes
Gualanday
Espinal
Buenaventura
Catufa
Natagaima
Palmira
Cali
Pradera
Neiva
Suárez
Santander
Piendamo
Popayan
Tumaco
Pasto
Ipiales
San Juan R.
Cauca River
Saldaña R.
Magdalena River
Guayabero R.
Patia R.
Meta River
Caquetá River

FIG. 3

104289°—27. (Face p. 26.)

GOVERNMENTAL CONTROL OF RAILWAYS

The present policy of the Colombian Government is to nationalize its railways and to construct all additional roads under its own auspices. Prior to 1900 concessions were granted by the Government for the construction of certain railways. Generally these concessions contained clauses subsidizing every kilometer of track constructed as well as enabling the Government to obtain control of the road after a certain period of time at either a fixed valuation or, if the time was sufficiently long, at no cost whatever. Under these concessions the Government retained no control of the railways.

After the civil war of 1905 the Government passed its first nationalization law; this was rescinded in 1909, and the lines which the Government operated were returned to their original ownership. The nationalization policy now being carried out actually came into force in 1922, when the Northern Railway was taken over. Funds at this time were also plentiful, and the Government seems to have become "railway minded," judging by the number of proposals for railway construction.

On March 1, 1922, the treaty authorizing payment of $25,000,000 in settlement of the Panama claims was exchanged by the Governments of Colombia and the United States. In a series of loans the Government allocated for railway construction $1,800,000 more than the $25,000,000 indemnity which was to be received. A brief summary of these laws follows:

	Pesos
Law 25 of 1923, for the Bank of the Republic	5,000,000
Law 60 of 1923, Puerto Wilches Railroad, four payments of 800,000 pesos each	3,200,000
Law 62 of 1923, Narino Railroad, four payments of 600,000 pesos each	2,400,000
Law 66 of 1923, Northern Railroad, four payments of 800,000 pesos each	3,200,000
Law 66 of 1923, Carare Railroad, four payments of 500,000 pesos each	2,000,000
Law 67 of 1923, Pacific Railroad, four payments of 1,000,000 pesos each	4,000,000
Law 67 of 1923, Bolivar Railroad, four payments of 500,000 pesos each	2,000,000
Law 67 of 1923, Antioquia Railroad (aid), four payments of 300,000 pesos each	1,200,000
Law 67 of 1923, Caldas Railroad (aid), four payments of 200,000 pesos each	800,000
Law 69 of 1923, aerial cable, Magdalena River-Cucuta, and Cucuta-Pamplona Railroad (the law does not detail)	4,000,000
Law 71 of 1923, Southern Railroad (prolongation to Fusagasuga), four payments of 150,000 pesos each	600,000
Law 80 of 1923, works in the Choco, four payments of 250,000 pesos each	1,000,000
Law 80 of 1923, canalization of the channel of San Juan of Cordoba, total	500,000
Law 80 of 1923, Tolima-Huila-Caqueta Railroad, four payments of 400,000 pesos each	1,600,000
Law 98 of 1923, Manizales-Choco aerial cable, four payments of 200,000 pesos each	800,000
Law 68 of 1924, establishment of farm loan bank	1,000,000
Total	33,300,000

It will be noted that a total of 33,300,000 pesos has been appropriated and charged to the indemnity. As of April 4, 1925, the expenditures were as follows:

	Pesos
1923, Bank of the Republic	5,000,000
1923, railroads, etc	651,726
1924, railroads, etc	8,415,186
1925, Jan. 1 to Apr. 4	2,391,045
Total	16,457,957

The sums expended for various public works are shown in the following statement:

	Pesos
Pacific Railroad	1,933,667
Northern Railroad	2,443,157
Puerto Wilches Railroad	1,806,213
Tolima-Huila-Caqueta Railroad	1,485,258
Antioquia and Caldas Railroads	1,270,000
Carare Railroad	266,746
Narino Railroad	130,173
Bolivar Railroad	77,376
Girardot Bridge	14,132
Magdalena River-Cucuta aerial cable	293,473
Manizales-Choco aerial cable	27,000
Dique Canal	455,000
Bocas de Ceniza	700,000
Buenaventura pier	555,762
Total	11,457,957

The above appropriations were not all. Two loans were negotiated, one by the Department of Caldaz in March for 6,000,000 pesos and the other by the Department of Antioquia in April, also for 6,000,000 pesos. The proceeds of these loans are to be used in further railway construction work. In May the Government appropriated 1,500,000 pesos of its income for January and February for similar work. It is also understood that the National Government is negotiating at the present time for a loan of 50,000,000 pesos, the proceeds of which will also be applied to railway construction projects.

RAILWAY LEGISLATION

The principal laws affecting railway construction and operation are as follows:

The railway law of 1892 provides that the Executive may grant railway concessions and subsidies without further confirmatory legislation within the prescribed limitations. The concessions may be for a term of 100 years, the Government reserving the right to purchase the property for cost at any time after 50 years at the appraised valuation and after 75 years at one-half the valuation. At the end of the full term of the 100-year concession the railway, together with its equipment and rolling stock (all to be in good condition) becomes the property of the Government without payment.

A subsidy may be either (1) a grant of not more than 300 hectares (about 750 acres) of public lands and a sum not exceeding 10,000 pesos per kilometer of line constructed, payable in 6 per cent bonds, amortizable by 10 per cent of the gross customs receipts of all the customhouses of the country, or (2) a guaranty of interest not exceeding 7 per cent per annum for 20 years on the capital actually invested.

Law No. 61 of 1896 provides a subsidy of 10,000 pesos per kilometer of line constructed by the Departments.

Law No. 102, of December 14, 1922, which is the beginning of present developments in Colombian railway construction, conferred various powers upon the Executive. This law is quoted in full:

LAW NO. 102 OF 1922 (DECEMBER 14), BY WHICH VARIOUS AUTHORIZATIONS ARE CONFERRED UPON THE EXECUTIVE

The Colombian Congress decrees:

ARTICLE 1. The Government is authorized to enter into contracts within the country or outside of it, with natural or juridical persons, in private law, for a loan or loans up to 100,000,000 pesos or £20,000,000 gold, to be used for the construction and development of the railroads, the improvement of the ports and the principal river lines of the nation.

ART. 2. A committee is hereby created composed of five members, elected in the following manner: Three thereof by the Chamber of Representatives and two by the Senate. This election shall be verified by the Senate, voting for one principal member and selecting those that may have received a majority of votes in successive order and in application of article 12 of Law No. 96 of 1920. Each principal member thus elected shall have an alternate; these alternates shall be private persons and be elected in the same manner as the principal members.

The said committee shall be designated as the "National Committee on Loans"; it shall have sessions whenever called together by the Minister of the Treasury or of Public Works to deal with matters devolving upon it, and according to the present law. Each one of these members shall receive a honorarium of 10 pesos for each session he attends.

ART. 3. The product of the loan shall be used exclusively for the construction and development of the railroad lines of the country, the improvement of the ports and of the principal river lines of the Republic on which a river tax is laid.

ART. 4. Among the railroad lines to which the preceding article refers, preference is to be given to the following:

(*a*) The line that at Bogota connects with the lower Magdalena, or with the Atlantic Ocean, crosses the Departments of Cundinamarca, Boyaca, Santander, and Magdalena, bifurcating through the valleys of the Chicamocha and Suarez Rivers, and with branches from Carare to Tunja and from Bucaramanga to Puerto Wilches.

(*b*) The line that connects at Cucuta with the Magdalena River.

(*c*) The line that connects at Bogota with the Departments of Tolima and Huila, up to Garzon.

(*d*) The line that connects with the railways of Ibague and the Pacific.

(*e*) The line running between Popayan and Cartagena and crossing the Departments of Cauca, Valle, Caldas, Antioquia, and Bolivar.

(*f*) The line from Tumaco to Ipiales and from the latter place to Popayan, passing through the city of Pasto; and

(*g*) The line that connects Choco with the trunk line from Popayan to Cartagena.

The preceding enumeration in no way implies preference of any of the lines mentioned, and for that reason the Government, in agreement with the committee, may rule regarding the construction or development of any one or all of the works referred to.

ART. 5. The loan or the loans shall be contracted for on the responsibility of the Colombian Republic and be subject to the following specific guaranties:

(*a*) Mortgage laid upon the whole or upon part of the railway lines already constructed or to be constructed and for which the product of the loan is to be used.

(*b*) Guaranty should be secured by the liquid revenues of the operation of such lines or of some of them.

(*c*) Guaranty should be secured by the liquid revenues of the river tax or of the canalization of the navigable rivers.

(*d*) The use from the amortization or guaranty fund of all or of a part of 80 per cent of the product of the indemnity due to Colombia by the United States of North America.

ART. 6. The service of the loan or loans as to interest and capital amortization shall be made in the form and according to the terms to be specified in the respective contracts, there being set aside thereof, in the first place, the liquid revenues from the operation of the lines in operation already mentioned, the product from the river tax or from the canalization of the navigable rivers, and the interest produced by the 20,000,000 pesos of the guaranty referred to under (*d*) of the preceding article.

Besides the specific guaranties hereinabove enumerated, the Government may resort, for the service of interest and capital amortization, to any other products from the national property and revenues not set aside for the ordinary service of the national budget.

ART. 7. The issues of bonds that may have to be made as a result of the contract for the loan shall be effected successively at such times and in such amounts as the construction of the works may require, and on the basis of computations to be made between the Government and the respective lenders, if the latter so demand.

ART. 8. The funds secured from the loan or loans must be held by the lenders at the disposal of the Government; but the latter may not draw upon such funds except by decision rendered by the National Committee on Loans. The said committee shall determine, by an absolute majority of votes, the amount that in each case is to be drawn from the funds of the loans and the amount that is intended for each work.

ART. 9. If one or more of the departments having railroad under construction should desire to take part in the financial operation authorized by the present law, the Government may enter into agreements with the authorized representatives of said entities for such purpose. In the agreements referred to there shall be stated the amount that each Department will take in the loan, the guaranty it offers, and the revenues which it sets aside for the service of its participation in the debt.

ART. 10. As soon as the operation authorized by the present law is, in definitive form, brought into effect, the Government shall proceed with the reorganization of the railroad office under the administration of the Ministry of Public Works with such personnel as may be necessary according to the requirements of such a service, and to that effect it is authorized to determine the appropriate salaries. In the committees that shall decide upon the technical matters of the railway lines, the chief of the general administration office of the Ministry of Public Works shall have the right to vote.

ART. 11. In the contract or contracts for loans that may be entered into there shall be included no clause prohibiting the Government from purchasing materials in free competition.

ART. 12. This law and the resulting negotiations do not interfere with loan negotiations that may be pending for national or departmental railway lines.

ART. 13. In order that the authorizations granted by the present law shall be valid in all respects they are subject to the following requirements:

(1) The favorable action of the State Council and of the National Committee on Loans. In such case the committee shall be presided over by a member of the committee itself. When the committee does meet, but not to render a decision regarding the loan contract or contracts submitted to its consideration, it shall be presided over by the appropriate minister, who shall have deliberative and voting power.

(2) The approval of the Executive.

When these requisites are fulfilled the said contract or contracts shall not require subsequent approval of the Congress.

ART. 14. The contract for the loan authorized by the present law shall not be approved by the Council of Ministers if it has not been published two weeks previous thereto in the Diario Oficial (Official Gazette).

ART. 15. If within one year, reckoned from the date of the going into force of the present law, it has not been possible to enter into negotiations regarding the loan and the construction of public lines in forms foreseen in the preceding articles, the Government shall be authorized to promote them by making use of the funds secured from the American indemnity.

ART. 16. In the execution of this law the Government shall see to it that foreign interests connected with the country shall belong to various nationalities.

ART. 17. The Government is entitled to contract with engineers of the highest reputation for the technical study, the estimate of construction cost, the prospects of production, etc., of a part or of the whole of the loans envisaged in article 4. In such case the surveys that may have been made up to the present day regarding any one particular line or some particular lines shall be taken into account in order to correct or supplement them if necessary. For the contracting of the loan or loans it is not absolutely necessary that the Government shall exercise in advance the right conferred upon it in this article.

ART. 18. Within the rights which by the present law are granted to the Government to contract for loans intended to be used for the construction of railway lines there is included the right to contract for the construction of such lines by means of advances on the part of the constructors of a quota not less than one-half of the actual cost of the construction, the Government being obligated to contribute the other one-half of the entire amount. But it is understood that in such case the construction contractors may not be given the administration of the works that they are constructing, nor granted any uncultivated lands nor lands of any other kind, nor any intervention whatsoever in the determination of the railway's rates. The constructors shall be entitled only to a right in the amortization of their capital, in the interest on the part contributed by them, and to a commission for the technical supervision, all of which as part of the contracts must be approved by the National Committee on Loans.

ART. 19. The expenses necessary for carrying out this law shall be deemed included in the estimate of the respective ministry.

ART. 20. The present law shall go into effect from the time of its publication.

Done at Bogota, December 3, 1922.

PRESENT PROGRAM OF RAILWAY CONSTRUCTION

The present program of railway construction is divided into three distinct groups—railways which are being constructed to provide immediate relief for transportation conditions in certain areas; those which are being constructed from political motives and will have no bearing on the completed railway system; and lastly, the development of a trunk-line system connecting the Pacific and Atlantic coasts with the capital.

In the first instance an excellent example is the extension of the Cucuta Railway to connect with the Tachira Railway of Venezuela. This will afford the coffee growers in that section a more direct shipping route to the sea. The railways into the Choco region and the proposed Medellin-Gulf of Uraba line are projects which are of no particular value, except perhaps from a military standpoint. The construction of a trunk line to be called the Gran Ferrocarril del Pacifico is the most important project under way in Colombia and perhaps in all South America, and is one which the Government should complete as soon as possible. The construction of this "trunk line" will offer through rail communication (of the same gauge) between the capital and the Pacific and Atlantic coasts and will establish transportation facilities in a region hitherto inaccessible economically.

At the present time the proposed trunk line has as its nucleus the Pacific Railway system, which owes its excellent condition to Gen. Vasquez Cobo. This road is undoubtedly one of the most efficiently operated in the country. It is expected that through service to Bogota from Buenaventura will be offered by the end of 1926, when the Armenia-Ibague section of the Pacific Railway will have been completed. From Ibague through service is now offered to Bogota, although it is necessary to change trains at the Magdalena River.

The construction of a bridge across this river is at the present time under way. Eventually the road will be connected with the proposed Bolombolo-Canafistula Railway and the proposed Central of Bolivar Railway, which extends from Canafistula to Cartagena. Other sections will be added to this system on the completion of the Central Northern and the Antioquia Railways.

The proposed Government construction program for 1926 is as follows:

	Pesos
Narino Railway, a stretch of 40 kilometers	1,540,000
Southern Branch of the Pacific Railway, section up to Popayan	1,350,000
Zarzal-Armenia Railway, 40 kilometers	1,800,000
Tolima-Huila-Caqueta Railway, stretch from Catufa to Golondrinas, 63 kilometers	1,441,000
Nacederos-Armenia Railway, 30 kilometers	1,320,000
Southern Railway, section to San Miguel, 11 kilometers	264,000
Carare Railway, 40 kilometers	1,740,000
Northern Central Railway, first section, 43 kilometers	2,365,000
Northern Central Railway, second section, 50 kilometers	2,376,000
Central Bolivar Railway, 40 kilometers	1,360,000
Telegraph line from Cucuta to Gamarra, 50 kilometers	750,000
Telegraph line from Gamarra to Ocana	500,000
Complete surveys telegraph line, Manizales to Choco	60,000
Complete the present equipment of the following railways: Girardot, Pacific, Southern, from Bogota to Chiquinquira	2,300,000
For subsidies	1,000,000
Completion of bridge at Girardot	200,000
For the Bocas de Ceniza	1,200,000
Canal del Dique of Cartagena	330,000
Total	21,896,000

The total amount for public works is thus estimated at 21,896,000 pesos, to involve the employment of 20,000 laborers, in addition to 11,000 already employed in this work.

The following is a statement of Colombian railways in operation or under construction on December 31, 1925, showing the kilometers of track in operation:

Government owned and operated railways:	Kilometers
Central Northern Railway (sections I and II)	156
Pacific Railway	479
Ferrocarril de Girardot	132
Ferrocarril de Tolima	76
Ferrocarril de Tolima-Huila-Caqueta	30
Ferrocarril del Sur	35
Ferrocarril de Tumaco-Ipiales-Pasto	(1)
Ferrocarril de Carare	(1)
Central Railway of Bolivar	(1)
Total	908

Department owned and operated railways:	
Ferrocarril de Cundinamarca [2]	63
Ferrocarril de Caldas	68
Ferrocarril de Antioquia	190
Ferrocarril de Amaga [3]	58
Ferrocarril de Ibague-Ambalema	6
Ferrocarril de Cauca [4]	(1)
Total	385

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[1] Under construction.
[2] Owned in part by Government.
[3] Owned in part by private interests.
[4] Being constructed out of funds provided by Antioquia Railway.

Privately owned and operated railways:	Kilometers
Colombia Railway & Navigation Co. (Ltd.)	108½
Barranquilla Railway & Pier Co. (Ltd.)	28¾
La Compañía del Ferrocarril de Cucuta	99½
Ferrocarril de La Dorada	111
Barranca Bermeja Railway	32
Santa Marta Railway	118½
Ferrocarril del Nordeste (under construction)	26
Total	523¾

Proposed railways:
- Barranquilla-to-Cartagena Railway.
- Great Bogota Atlantic Railway.
- Medellin-to-Gulf of Uraba Railway.
- Ferrocarril del Choco.
- Ferrocarril de Nacederos-Armenia.
- Bahia Honda to Bogota Railway.
- Tramways: Medellin tramway.

Cableways:	
La Dorada Cableway[5]	72
Cucuta to Magdalena River Cableway (proposed)[6]	170
Manizales-to-El Choco Cableway.	
Total	242

Summary:	
Total railways	[7] 1,816¾
Total cableways	242

A brief history of each of the roads, together with the latest data available on their financial and operating conditions is given in the following pages.

CENTRAL NORTHERN RAILWAY (SECTIONS I AND II)

The Government owned and operated railways and projects mentioned in the above title, although apparently of different origin and designation, all refer to what is now known in the official archives of the "Obras Públicas" as the "Central Northern Railway, sections 1 and 2." The road and projects have the sole purpose of connecting Bogota with the lower Magdalena River. Many of the plans have been contemplated for some time, particularly the one for connecting Bogota with Puerto Wilches direct, although this line will not be constructed at the present time. It now looks as though the road will follow the old Colombian Northern Railway to Zipaquira, the route from that point being over the Government-constructed Central Northern Railway, which is in operation as far as Lenguazaque and is now under construction to Chiquinquira and Moniquira via El Claro. This part is known as section 2. From this point no definite route has as yet been selected, but in view of the fact that section 1 of the road (the Puerto Wilches-Bucaramanga section) is being constructed rapidly toward Bucaramanga, it is felt that the extension from Moniquira will eventually connect this point. Both sections are now owned and operated by the Government.

Purchases.—Purchases of materials for the different kinds of work on the railway are made by the Dirección General de Ferrocarriles in Bogota through public bids. The general manager's office (gerencia) sends the lists of materials, etc., needed to the board of directors (junta directiva), and that body passes the lists on to the Dirección

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[5] Operated by La Dorada Railway.

[6] Will be operated by Cucuta Railway.

[7] A report from the United States commercial attaché at Bogota, dated April 17, 1926 gives the total mileage in operation as 1,867 kilometers.

General de Ferrocarriles, which is a section of the Ministry of Public Works. When the materials, etc., are urgently needed, the board of directors authorizes the general manager's office to get them without the intervention of the Dirección General.

FERROCARRIL CENTRAL DEL NORTE, SECTION I (PUERTO WILCHES RAILWAY)

SURVEY OF DEVELOPMENT

The history of this road dates from 1884, when approximately 4 kilometers of track was constructed. Because of the civil war in Colombia construction was abandoned, and it was not until 1889 that a contract was entered into with an English company for additional construction. Under this contract, however, no work was done. In 1906 the Colombian Government granted a concession for 99 years to the Great Northern Railway of Colombia (Ltd.), for the construction of a railroad extending from Puerto Wilches to Bucaramanga, a distance of 154 kilometers, with the right to further extend it to Bogota.

The concession was one of the most liberal ever granted by the Government, which contracted to pay a subsidy of 40,000 pesos per kilometer of equipped road and guaranteed 7 per cent per annum return on that basis of cost. The company was capitalized at £495,000, although, as with many other Colombian railway projects, this capitalization was largely in excess of the actual cash investments. The road, like many others in Colombia, has had a series of troubles—political, legal, and others. In addition, the terms under which the road was to be constructed called for Andine construction of the highest degree in a tropical climate. Work was commenced on this road in 1908, and up to 1917 only 20 kilometers of track had been laid; this amount was finished and opened to traffic on June 2, 1910.

In 1917 the Government enacted a law which provided for the continuance of the construction of this railway by using 5 per cent of the revenue from the Atlantic customhouses at Barranquilla, Santa Marta, and Cartagena. The same law provided for a contract to be made with the old company or with another company to carry out the work and, in the meantime, to pay the Department of Santander the share of the receipts from the customhouses in order to start the work.

Unfortunately, during the war the falling off of imports made the customs receipts inadequate even for the most pressing needs of the Government. The situation gradually grew worse, and it became necessary for the Government to issue large amounts of internal-debt bonds in order to cover its most pressing obligations. The Department of Santander was assigned 500,000 pesos of these bonds for the railway work, and part of them were bought in by means of public subscription by the people of Bucaramanga as a popular effort to get the railway work started by the Department. These bonds sold as low as a 20 per cent discount, however, and it is not known whether a sufficient fund was secured for this purpose. The Government came into possession of the road in 1921.

On October 3, 1923, the Government enacted the following law:

ARTICLE 1. Under the sanction of the present law the construction and administration of the Puerto Wilches Railway remains in charge of the nation, which surrogates to the Department of Santander the rights that the Department acquired by virtue of article 1 of law 18 of 1921, a substitution considered to be completed by the return to the Department of the sums that were invested in the construction of that railway from its own resources.

The sum necessary to cover this cost will be included in the law of appropriations for 1925.

ART. 2. There is allotted to the construction of the Puerto Wilches Railway the sum of 800,000 pesos per annum, which the Government will take from the payments No. 2, 3, 4, and 5 of the indemnity from the United States.

ART. 3. The Government will take the necessary measures for intensifying the labor on the Puerto Wilches Railway in such manner that the allotments from the second and third payments of said indemnity shall be completely invested within the course of the year 1924.

ART. 4. If the total sums allotted by the present law to the construction of the Puerto Wilches Railway should not be sufficient to extend it to the city of Bucaramanga, the Government shall negotiate for a loan secured by the value of the work (railway) and its income, or to invest such income in the extension of the line to its terminus.

ART. 5. The Government is authorized to commence to expend the funds from the American indemnity on the works to which they were appropriated by law 102 of 1922. If in the course of the life of that act the provisions for the expenditure of the second payment are not completed, they will be included in the law of appropriations of next year for the same purpose. The Government shall immediately reorganize the office of railways of the Ministry of Public Works, in the manner provided for in article 10 of said law 102 of 1922. The expenses required by this organization shall be included in the budgets of this and the succeeding years.

ART. 6. This law shall take effect from the date of approval.

Signed on October 8 by the several necessary officials of the House and Senate.

Signed on October 9 by the President of the Republic and the Minister of Public Works.

In the meantime some construction work had been accomplished, and on December 31, 1925, the road had 50 kilometers of track in operation, extending from Puerto Wilches to Sabana de Torres.

The English firm of Norton, Griffiths & Co. (Ltd.) presented proposals to the Government for the construction of the unfinished portion of the road, but no action was ever taken on their proposals. In 1925 Marcel Leboucq, a Belgian engineer, came to Colombia under contract of the Colombian Government as a technical advisor for this railway, but his services were of short duration.

At the present time the road has been constructed, but not opened to traffic, as far as Puerto Santos, a distance of 12 kilometers. Construction work on the remaining 68 kilometers to be constructed to connect the road with Bucaramanga is at the present time under way. It is expected that construction work will be completed to Conchal by August, 1926.

OPERATING OFFICIALS

The road is being operated at the present time by the Government and is known as the Central Northern Railway, First Section. The officials of the road are as follows:

Chief engineer, Pablo Vanegas, Puerto Wilches, Colombia.
Resident manager, Pablo Vanegas, Puerto Wilches, Colombia.
Agents for minor purchases:
  Francisco Arocha E., Barranquilla.
  Vicente A. Rangel, Cartagena.
  Jorge Jacome Niz, Bogota.
  Alfredo and Ambrosio Pena, Bucaramanga.

FINANCES

The following table is indicative of the financial condition and traffic movement of the road for the calendar years mentioned:

Year	Freight carried		Passengers		Total receipts
	Kilos	Receipts	Number	Receipts	
		Pesos		*Pesos*	*Pesos*
920	3, 857, 280	14, 454	11, 739	3, 129	17, 603
921	5, 529, 707	24, 964	15, 652	4, 116	29, 080
922	10, 366, 000	34, 107	16, 519	4, 272	38, 379
923	13, 280, 000	43, 329	30, 663	7, 929	51, 758
924	10, 498, 000	48, 172	36, 714	14, 692	62, 864
925	13, 346, 500	85, 324	50, 035	28, 916	114, 336

TRAFFIC

For the year 1925 the road carried 13,346½ tons of commodities, made up as follows:

	Tons
Agricultural products (coffee, maize, rice, tobacco)	4, 407
Animals and animal products (cattle, hides)	4, 572
Mineral products (salt)	150
Manufactures of the country (cigars, cigarettes, beer, hats, petroleum products)	3, 283
Foreign manufactures (merchandise, machinery, etc.)	934½

RIGHT OF WAY

Altitude.—The road runs from 90 meters above sea level to 1,018 meters, the highest point on the road.

Gauge.—The road is of 1-meter gauge throughout.

Grades.—The maximum grade is 2 per cent compensated.

Curves.—The minimum curve radius on the road is 100 meters.

Ballast.—Sandstone is used for ballast.

Ties.—Ties of heartwood, secured locally, 6 feet in length and spaced 14 to each section of rail, are used.

Rails.—Rails weighing 55 kilos per yard, in 30-foot sections, are used.

Water.—Water is secured along the right of way and stored in galvanized iron tanks at distances varying from 5 to 8 kilometers. There are three water stations.

Fuel.—Oil and wood are used for fuel. Oil is secured from the tropical oil station at Barranca Bermeja, and the wood is obtained locally along the right of way. Three of the locomotives burn oil and one burns wood.

Maintenance.—The road is kept in good condition through current inspection.

Signaling equipment.—Flags, lanterns, and whistles are used for signaling.

Bridges.—There are 12 iron and 4 timber bridges on the line, the spans varying from 3.7 to 30 meters. Three of the timber bridges are reinforced with rails. Seven of the bridges are placed on foundations of rubblework, the others on foundations of concrete.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

The locomotives in use on the road for the calendar year ended December 31, 1925, were as follows:

Number	Type	Base, rigid		Weight, running order	Pressure	Surface	Evaporating capacity	Tractive effort	Hauling capacity
		Ft.	*In.*	*Tons*	*Pounds*	*Feet*	*Pounds per hour*	*Kilos.*	*Tons*
1	0-6-0	10	6	27	170	638	3, 000	5, 400	190
2	0-6-0	10	6	27	170	638	3, 000	5, 400	190
3	2-4-0	4	9	15½	180	408	2, 200	3, 090	115
4	6	6	6	$21\frac{6}{10}$	165	495	2, 800	4, 320	150

The cars include 11 passenger cars, 14 freight cars, and 7 cattle cars.

REPAIR SHOPS

There is one repair shop, located at La Gomez, which is fairly well equipped. The shop averages 55 employees per day.

FERROCARRIL CENTRAL DEL NORTE, SECTION II (FERROCARRIL COLOMBIANA DEL NORTE)

SURVEY OF DEVELOPMENT

The history of this railroad dates from 1884, when the State of Cundinamarca granted a concession for the construction of a line extending from Bogota to Zipaquira. Because of the outbreak of the civil war in 1886, the concessionaires were unable to carry out the terms of the original agreement. In the same year the State of Cundinamarca ceased to exist as such and became a Department in the Federal Republic of Colombia. In 1889 the Government entered into a contract with the concessionaires under which the Government granted them a subsidy of 15,000 pesos per kilometer of line constructed, payable in installments of 100,000 pesos each, due every five years commencing with the fifth year after the completion of the line. In 1890 a Colombian company was organized for the purpose of constructing this line in accordance with the terms of the concession of 1884, and executed a public deed whereby the security of 100,000 pesos was deposited as a guaranty which was called for by the original concession.

In the year 1892 certain disputes and differences arose between the Government and the concessionaires, and a new contract was entered into in June of that year for the purpose of settling them. The principal dispute arose over the use of a road between Chapinere and Puente del Cumun by the railroad as a right of way. On February 1, 1898, the Colombian Northern Railway Co. was incorporated under the terms of a contract entered into between the Government and the concessionaires in 1897. The road was completed and opened to traffic between Bogota and Zipaquira, a distance of 47 kilometers, during the year.

On September 22, 1905, a further agreement was made between the Government and the concessionaires, to settle differences that had arisen in connection with the previous contracts and also to provide means for the construction of the extension to Chiquinquira. Under the terms of this agreement the Colombian Central Railway Co. (Ltd.) was organized for the purpose of constructing this extension. In 1915 the Colombian Central Railway Co. transferred its undertaking to the Colombian Government and the company was dissolved. The Government completed the road from Zipaquira to Nemocon and from Nemocon to Lenquazaque, a distance of 59 kilometers. In April, 1926, the entire extension to Chiquinquira, a distance of 150 kilometers, was supposed to be opened. This section of the road was operated by the Government under the name of the Central Northern Railway.

The differences between the Government and the company were never satisfactorily adjusted, and as early as 1921 action was commenced against the company in the Colombian courts by the Government in order to effect an adjustment of its claims. In the court decision eventually rendered in this case the differences apparently were not settled to the satisfaction of either the Government or the concessionaires, and on July 14, 1925, the Government took over the Northern Railway. The President, by a decree of the same date, made provisions for the future functioning of the enterprise, stating that it would henceforth be known as the Ferrocarril del Norte. Its provisional manager was to be Dr. Horacio Uribe Marquez, and the employees then in service were to retain their positions at the salaries previously enjoyed by them. No mention was made in this document of the position of the foreign or Colombian holders of the railway's securities.

At the present time no expert has yet been appointed to evaluate the road so that a satisfactory financial settlement may be arrived at between the Government and the company. Construction on the Chiquinquira-Moniquira (via El Claro) extension has already commenced. In addition a branch is to be constructed from Nemocon to Tunja, where it will connect with the Carare Railway.

It is noted in the latest reports that the Government speaks of this railway as the Central Northern Railway, Second Section, so it is presumed that the name of this road has again been changed. As of January 1, 1926, the Central Northern Railway, Second Section, has 106 kilometers of track in operation:

	Kilometers
Bogota to Zipaquira	47
Zipaquira to Nemocon	15
Nemocon to Lenquazaque	44
Total	106

OPERATING OFFICIALS

The road is operated by the Government, and Dr. Horacio Uribe Marquiez, at Bogota, is the provisional manager.

FINANCES

According to the Stock Exchange Yearbook for 1925, the capitalization of the road is as follows:

One hundred and fifty thousand pounds, shares of £5, fully paid. Authorized, £150,000. Share capital, formerly £300,000 in £10 shares, reduced to present amount by repayment in June, 1917, of £5 per share satisfied by issue of second debentures at par.

One hundred and fifty thousand one hundred pound 5 per cent first-mortgage debenture bonds of £20 and £100 (bearer), outstanding balance of £180,000 issued in 1905. Interest May 1 and November 1. Repayable—at par on May 1, 1945; or at 105½ at any time earlier on six months' notice from company or in event of voluntary liquidation; sinking fund provided of 10 per cent of net profits each year, applicable to purchases at not over 105½. Secured by trust deed as first mortgage on railway, etc., and general charge on whole undertaking except company's rights in Ferreria de la Pradera Co.; trustees, London & South American Investment Trust (Ltd.), C. A. Vargas.

One hundred and thirty-three thousand two hundred and eight pound 5 per cent second debentures of £100, £20, and £5 (bearer), outstanding balance of £150,000 issued in 1917 in satisfaction of £5 per share returned to shareholders. Interest, noncumulative, payable annually out of profits, after which 10 per cent of further profits is contributable to sinking fund for redemption of second debentures by purchase at or below par or drawings at par; redeemable also at par, whole or part, on 30 days' notice from company. Secured by trust deed in same way as, but subject to, first-mortgage debentures; trustee, City Safe Deposit & Agency Co. (Ltd.). Full interest has always been paid (usually in July).

Accounts to June 30, submitted December. Dividends (free of income tax) ten years to 1921–22, 4; two years, 1923–24, nil. Net receipts 1923–24, £67,130 (compared with £59,538). Reserve, £90,000; first-mortgage debenture redemption fund unapplied, £7,978; second ditto, £5,896; carried forward, £28,616 (compared with £37,836), after placing £30,000 to reserve (included above) and writing off £12,304 expenditure for replacement of rolling stock. Net receipts July 1 to October 31, 1924, £18,730 (decrease, £284).

The following is a statement showing the working results of the road, including the Zipaquira-to-Nemocon section (Government owned) for the fiscal years 1922, 1923, and 1924:

Years	Passengers carried	Freight carried	Gross revenue	Cost of operation	Net receipts
		Kilos	*Pesos*	*Pesos*	*Pesos*
1922	873, 487	103, 195, 437	528, 600	248, 123	280, 477
1923	921, 390	100, 822, 000	502, 259	225, 518	276, 741
1924	896, 588	107, 715, 375	521, 415	201, 658	319, 757

There is shown below the financial statement of the company for the fiscal year ended June 30, 1924. This is the latest statement available. The balance sheet is given first.

LIABILITIES

	£	s.	d.	£	s.	d.
Share capital, 30,000 ordinary shares of £5 each				150, 000	0	0
5 per cent first-mortgage debenture bonds	180, 000	0	0			
Less amount redeemed	29, 900	0	0			
				150, 100	0	0
5 per cent second-debenture bonds	150, 000	0	0			
Less amount redeemed	16, 720	0	0			
				133, 280	0	0
Sundry creditors				37, 090	15	7
Reserve account				90, 000	0	0
First mortgage redemption fund:						
Amount redeemed as above	29, 900	0	0			
Available for further redemption	7, 978	5	5			
				37, 878	5	5
Second-mortgage redemption fund:						
Amount redeemed as above	16, 720	0	0			
Available for further redemption	5, 896	6	10			
				22, 616	6	10
Provision for interest on £133,280 second-mortgage debentures				6, 664	0	0
Net revenue account				28, 616	8	11
Total				656, 245	16	9

ASSETS

	£	s.	d.	£	s.	d.
Cost of undertaking as at June 30, 1923	565,404	16	11			
Additional capital expenditure during the year ended June 30, 1924	26,905	1	10			
				592,309	18	9
Stores in hand				34,033	9	1
Goods in transit				1,227	11	4
Sundry debtors and debit balances				8,998	3	7
Investments (at valuation June 30, 1924)				10,965	1	8
Cash at bankers and in hand				8,711	12	4
Total				656,245	16	9

Following is the revenue account for the year ended June 30, 1924:

EXPENDITURES

	Pesos	Pesos
Maintenance charges:		
Permanent way	23,704.94	
Locomotives	6,921.06½	
Carriages and wagons	10,604.56	
Stations	22.75	
		41,253.31½
Traffic expenses:		
Locomotive service	43,468.86	
Station service	41,882.94	
Train service	19,959.07	
Telegraph service	3,537.12	
Permanent way	6,958.88½	
Workshop service	5,757.47	
		121,564.34½
Managing director's commission, managers' and clerks' salaries		38,505.70½
General expenses		11,360.10½
Balance carried down		303,026.63
		515,710.10

	£	s.	d.
London office rent and salaries	200	0	0
Cables, printing, and miscellaneous expenses	518	7	4
Traveling expenses	300	6	11
Insurance	82	0	0
Interest	229	1	9
Legal expenses, Government claim	1,229	15	11
Trustee's fees	150	0	0
Directors' fees	808	10	4
Managing director's fees	1,500	0	0
Audit fees	52	10	0
Balance carried down	63,747	12	9
Total	68,818	5	0

RECEIPTS

	Pesos
Passenger traffic	227,159.14
Goods traffic	280,640.97
Sundry receipts	7,909.99
	515,710.10

	£	s.	d.
Balance brought down, 303,026.63 pesos, at 90.28 per cent exchange (average rate for the period)	67,130	8	0
Interest from investments	611	14	9
Exchange account	1,075	7	3
Transfer fees		15	0
Total	68,818	5	0

The net revenue account for the year ended June 30, 1924, is shown below:

	£	s.	d.
Dr.:			
Interest on first mortgage debentures	7,505	0	0
First mortgage debenture redemption fund	4,125	1	10
Income tax	6,635	14	3
Renewal account, being expenditure during the year for replacement of rolling stock	12,304	13	3
Provision for interest and sinking fund on £133.280 second debentures	9,710	3	10
Corporation profits tax	2,687	0	6
Reserve account	30,000	0	0
Balance carried to balance sheet	28,616	8	11
Total	101,584	2	7
Cr.:			
Balance June 30, 1923	37,836	9	10
Balance from revenue account for year ended June 30, 1924	63,747	12	9
Total	101,584	2	7

RIGHT OF WAY

Altitude.—The road runs from 2,598 meters above sea level at Cajica to 2,640 meters at Bogota, which is the highest point on the road.

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade is 2 per cent compensated, for a distance of 670 meters between Bogota and Nemocon. There is no grade more than 1,800 feet long.

Curves.—The minimum curve radius is 300 meters.

Ballast.—The road is ballasted with rock.

Ties.—Ties are spaced 54 centimeters from center to center.

Rails.—Rails weighing 40 pounds to the yard, a large quantity of which are in 20-foot lengths, are used. Some of the rails are now being replaced by new 60-pound steel rails.

Water.—The water supply is good. Water stations are located at Bogota (6,000 liters), Chapenero (4,000 liters), Cajica (6,000 liters), Otono (1,000 liters), and Nemocon (4,000 liters).

Fuel.—Bituminous coal from Nemocon is used for fuel. Fuel stations are located at Bogota (quantity 1,000 tons) and Nemocon.

Signaling equipment.—Semaphores are used for signaling.

Lighting.—Of the rolling stock in use on the road, six locomotives are equipped with 32-volt headlights. This is the only electric lighting in use.

Maintenance.—The roadbed is in excellent condition.

Bridges.—There are three small bridges on the line.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

As of December 31, 1925, this road had the following motive power and rolling stock in operation: Locomotives, 14 (6 new and of American manufacture); passenger coaches, 44 (American manufacture); freight cars, 125; total, 183.

Sharon couplers, 26 inches above rail, are used.

There is one repair shop, located at Bogota.

PACIFIC RAILWAY

(FERROCARRIL DEL PACIFICO)

SURVEY OF DEVELOPMENT

The history of this road dates back to 1848, when Gen. Eusebio Bonero attempted to construct a railway following the old mule trail from Buenaventura to Cali. It was not until 1878, however, that actual construction of the railway was commenced by Francisco J. Cisneros. Señor Cisneros constructed 23 kilometers (to Cordoba) and left graded 6 kilometers more when a political change in 1883 obliged him to give up his contract.

Between 1885 and 1890 the road was administered by the National Government. During the period no additional track was constructed, and that already built was barely maintained. In 1891 James Cherry, an American, entered into a contract to complete its construction. In six years, up to 1897, he built only 7 kilometers. The Government had previously completed the 6 kilometers graded by Señor Cisneros. From 1897 to 1899 Ignacio Munez and Victor Borrero entered into a contract to carry on the construction. These gentlemen had built 10 kilometers when the civil war of 1899 and the death of Señor Borrero ended their contract. In 1903 Ignacio Munez made a new contract, but in two years built only 2 kilometers. In 1905 the contract was given to Alfredo and Eduardo Mason, Americans, who in two years built 7 kilometers, carrying the road to Cisneros, a total distance of 54 kilometers.

The Masons in 1907 turned the road over to the Compañía del Ferrocarril del Pacífico, organized under the auspices of the Central Bank of Bogota. On November 25, 1908, the company contracted with the National Government to continue the work until completed. In 1914 the road was opened from Buenaventura to Cali, a distance of 174 kilometers.

The Government in 1916 contracted anew with the Pacific Railway, modifying the conditions of the original 1905 contract with the firm of Bishop & Mason. Under the new agreement the company accepted a reduction of 8,000 pesos per kilometer of Government subsidy and also relinquished all rights to national coal mines found within 40 kilometers of the right of way. The company also relinquished all rights of an optional character appertaining to the construction of coal docks at Buenaventura and also the right to manage this road for the period of 50 years after its completion and to receive one-half of the profits of such operation—agreeing also not to transfer its contract to a third party without the consent of the Government. In return for these concessions on the part of the company the Colombian Government agreed to assist the company in securing a foreign loan with which to complete the railway and other works, and also for the amortization of the drafts drawn by the Government on the Buenaventura customhouse in payment of railway construction dues, the railway being entitled to one-half of the product of this customhouse as a guaranty of the payment of the company's construction costs. Many conditions for the payment of costs of construction were also included in this agreement, together with the project for a new coaling station on the island of Gorgona just south of Buenaventura.

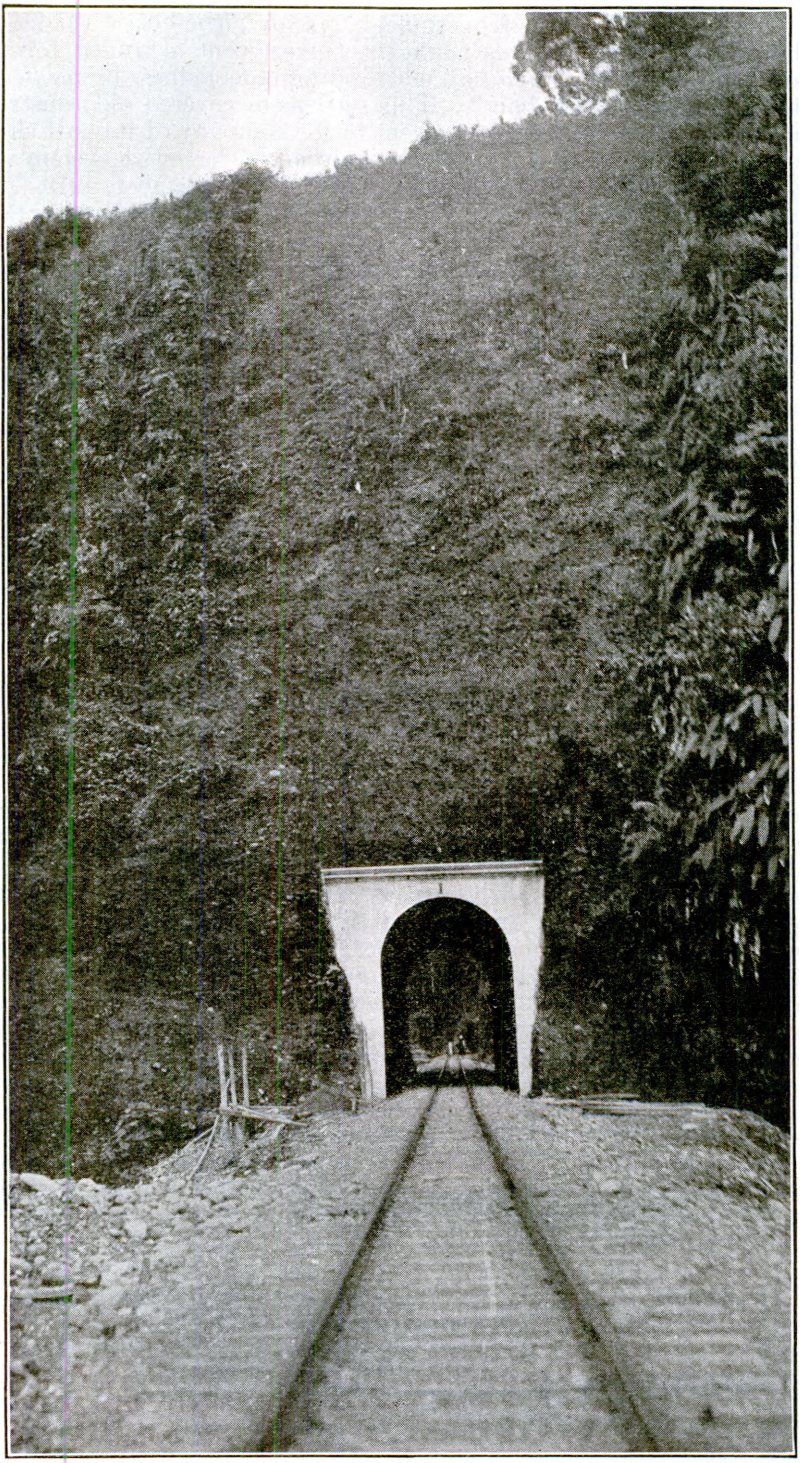


FIG. 4.—Coloradas tunnel, Pacific Railway, Colombia

On July 25, 1919, the Government took over the entire road. At the time this contract was made the Government arranged for the payment to the company of all outstanding indebtedness by means of the new internal loan bonds. This settlement covered old construction bonuses and the reimbursement to the company of its half share in all of the losses of operation of the road. The entire system was turned over to the Government by the end of September, 1919.

The administration of the railway was by means of two "juntas," the directing junta being resident in Bogota and the administrative in Cali. These juntas, which existed until December 31, 1921, built 73 kilometers, carrying the road to Buga, 241 kilometers, and to Suarez, 67 kilometers on the southern branch.

In 1922 there was a reorganization and the administrative junta at Cali was abolished, leaving the directive junta in Bogota and a superintendent resident in Cali. During this and a part of 1923, 23 kilometers had been built to the north, carrying the road to Tulua, 264 kilometers.

Under law 67 of 1923 the Government appropriated 4,000,000 pesos of the American indemnity fund in four payments of 1,000,000 pesos each to further the construction of this road.

As of December 31, 1925, the road had the following track in operation:

	Kilometers
Buenaventura to Cali	174
Cali to Cartago	173
Cali to Piendamo	118
Palmira to Pradera	14
Total	479

At the present time construction of the road is being carried on toward Popayan on the southern line and toward Armenia on the branch. Both of these roads should be completed in 1926. On March 18, 1926, 53 kilometers on the southern line and 90 kilometers on the northern line had been constructed. The Santander-Tumba section was completed and opened to traffic. In this connection it might be well to mention the Ferrocarril del Quindro, as it has been called in some of the Government reports. This is the road that is to connect Armenia with Ibague, the terminus of the Tolima Railway, a distance of 173 kilometers. A maximum grade of 3 per cent is used. On the basis of a 6 per cent maximum grade the distance could be shortened to 80 kilometers. The first will cost approximately 12,000,000 pesos, while the latter is estimated at 3,000,000 pesos. However, this project does not appear in the 1926 construction program, so it is not known whether the road will be constructed as a branch of the Pacific Railway or as an independent road. Eventually the Girardot, Tolima, and Cundinamarca Railways will become sections of this road whose name will be changed to the Gran Ferrocarril del Pacífico.

In connection with the passenger service operated by the railway, motor-bus lines run from Cali to Buga la Grande and Zarzal, and from Piendamo to Popayan.

OPERATING OFFICIALS

The road is owned and operated by the Government through the Minister of Public Works. The principal operating officials are:

Managers:
  Alfredo Vasquez Cobo.
  Alfonso Rebolledo.
Chief engineer, Arturo Arcila Uribe.
Chief engineer, northern section, Pablo E. Lucio.
Chief engineer, southern section, Manuel Maria Mosquera.
Chief engineer, section from Palmira to Santander, Froilan Sanchez.
Engineer of first section. in charge of repairs, Joaquin Caicedo E.
Treasurer, Manuel Sinisterra.
General accountant, Salustio Gonzalez A.
Purchasing agent, Jose A. Arroyo.
Chief of traffic, Gustavo Holguin Ll.

PURCHASES

Purchases of materials for the different kinds of work of the railway are made by the Dirección General de Ferrocarriles in Bogota through public bids. The general manager's office (gerencia) sends the lists of materials, etc., needed to the board of directors (junta directiva), and that body passes the lists on to the Dirección General de Ferrocarriles, which is a section of the Ministry of Public Works. When the materials, etc., are urgently needed, the board of directors authorizes the general manager's office to get them without the intervention of the Dirección General.

FINANCES AND TRAFFIC STATISTICS

Following is a statement showing the traffic movement and finances of the road for the years indicated:

Years	Kilometers in operation	Tons of freight	Passengers	Cattle	Birds	Gross revenue	Operating expenses	Net profit or loss	
								Deficit	Surplus
			Number	*Number*	*Number*	*Pesos*	*Pesos*	*Pesos*	*Pesos*
1910	82	9, 877	13, 387	975	346	145, 722	273, 387	127, 665	
1911	82	22, 335	12, 908	885	209	200, 966	266, 947	65, 981	
1912	82	24, 706	11, 970	1, 086	325	183, 461	211, 699	29, 238	
1913	37	21, 979	18, 473	744	242	105, 533	186, 245	80, 712	
1914	161	21, 881	28, 616	648	634	222, 476	281, 032	58, 555	
1915	196	25, 979	57, 394	830	1, 080	320, 892	401, 249	80, 357	
1916	208	31, 330	105, 101	4, 290	2, 143	355, 377	403, 442	48, 065	
1917	233	51, 912	202, 301	7, 822	5, 819	454, 081	475, 462	21, 381	
1918	233	59, 035	273, 970	10, 830	7, 814	428, 788	444, 461	19, 673	
1919	233	65, 617	332, 624	14, 086	11, 302	558, 988	496, 663		62, 325
1920	233	118, 721	399, 875	14, 867	14, 693	898, 202	891, 603		6, 889
1921	269	125, 477	396, 842	11, 849	10, 715	1, 100, 731	893, 123		207, 608
1922	306	100, 565	368, 192	10, 158	9, 757	1, 122, 173	817, 412		304, 761
1923	330	138, 027	588, 052	9, 169	10, 769	1, 483, 858	1, 008, 261		475, 596
1924	390	155, 741	757, 577			1, 888, 297	1, 444, 293		744, 014
1925	479					2, 585, 605	1, 457, 617		1, 127, 988

RIGHT OF WAY

Altitude.—The road runs from 2,730 feet above sea level at Buenaventura to 5,250 feet at Cresta del Callo, the highest point on the road.

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The maximum grades on the road are of 2 kilometers each, having 3 and 4 per cent grades, but with compensated curves.

Curves.—The radius of the minimum curve on the road is 80 meters.

Ballast.—The ballast is broken hard rock laid 12 inches thick under ties.

Ties.—Ties are of hardwood.

Rails.—Rails in 30-foot sections, weighing 55 pounds to the yard, are used.

Water.—The water supply is good. The maximum distance between water stations is 27 kilometers.

Fuel.—Bituminous coal, obtained from the Chipichape mines, is used as fuel. Tenders carry sufficient coal for the round trip. A typical analysis of the coal used is: Free carbon, 0.70; volatile matter, 0.28; ash, 0.065; sulphur, 0.0075.

Signaling equipment.—Colored flags and lanterns are used for signaling.

Clearance and loading.—Clearance on the road is limited to 10 feet in width and 12 feet from top of rail. Loading capacity is 15 tons, limited to 30 feet in length, 8 feet in width, and 8 feet in height.

Maintenance.—The road is in fair condition.

Bridges.—All bridges are of steel, seven of which are over the Rio Dagua between Caldas and Buenaventura. These bridges are all from 100 to 216 feet between abutments. There is one very large steel bridge over the Cauca River, between Cali and Palmira, which has a revolving span 53 meters in length and a solid span 27 meters in length.

Tunnels.—Between Buenaventura and Cali there are 12 tunnels, which have a total length of 2,116 feet, the longest being 482 feet in length. Two of these are blasted out of solid rock, while the remaining 10 are lined with concrete.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock for the calendar year 1925 were as follows:

Locomotives (weight 60 to 80 tons)	25
Passenger cars:	
First class	15
Second class	25
Total	40
Freight cars:	
Covered cars	92
Flat cars	92
Cattle cars	7
Total	191

All cars have Westinghouse air brakes.

Link-and-pin couplers are used. The locomotives carry four pocket couplers 23 inches above rail.

REPAIR SHOPS

Repair shops are located at Dagua. At both Cali and Buenaventura roundhouses are located. The shop at Dagua includes a roundhouse, foundry, machine shop, carpenter shop, electric light plant, material storage sheds, etc., the mechanical equipment being sufficient to take care of the repair needs of the road at the present time.

COLOMBIAN NATIONAL RAILWAY CO. (LTD.): GIRARDOT RAILWAY

(FERROCARRIL DE GIRARDOT)

SURVEY OF DEVELOPMENT

The history of this road dates from June 21, 1881, when Francisco J. Cisneros commenced the construction of the first section of this railway, extending from the town of Girardot to Tacaima, a distance of 33 kilometers. Construction of the road was supervised by a "junta directiva," which had been created for this purpose. The financing of the construction was as follows: The National Government was to contribute 500,000 pesos and the Department of Cundinamarca 100,000 pesos yearly. On October 24, 1884, Señor Cisneros was authorized to extend the line from Tocaima to Juntas de Apulo, but on account of the Colombian civil war of 1885 the project was not completed. On May 1, 1886, the Government, under the administration of Carlos Saenz, took over the railway and continued its construction as far as Juntas de Apulo, a distance of 39 kilometers. On September 17, 1887, the Government entered into a contract with Carlos Uribe to continue the construction from Juntas de Apulo to the Sabana Railway. On November 4 of the same year this contract was transferred by Señor Uribe to Señor Cisneros. The railroad was managed by a syndicate until September 23, 1890, when a contract was executed between the National Government and Don Luis Nieto, a representative of the River Plate Loan & Agency Co. (Ltd.), of London. This contract was annulled on March 23, 1892, because the concessionaires had not carried out their part of the agreements. On May 24 of the same year the Government contracted with John H. Pennington, but declared the contract void on September 29, 1894, because construction work had stopped for more than six months. The Government again took over the road until it contracted with Samuel B. MacConnico on December 26, 1894. Under this contract the extension of the road was begun from Anserma toward Anapoima. On March 25, 1895, Mr. MacConnico transferred his rights to the Great Colombian Railway Co. On July 31, 1897, this contract was transferred to Jose Manuel Goenaga. On January 3, 1898, Señor Goenaga transferred his contract to Juan B. Mainero y Truco.

On June 19, 1898, the Colombian National Railway Co. (Ltd.) was incorporated in England to acquire a concession from the Government of Colombia for the exclusive right to construct and operate a railway extending from Bogota to Girardot, a distance of approximately 132 kilometers. The company took over that section of the line which had already been completed (29 kilometers) and continued its construction until September, 1909, when the road was opened throughout its entire distance. The concession was valid until December, 1993. In addition the Government granted a subsidy of approximately £3,200 a mile, together with a grant of land of 123,000 acres to be selected by the company in blocks of 2,500 acres or more. The company was also granted certain monopolies—the free use of any lands belonging to the nation required for the railway, exemption during the life of the concession from all import duties on all materials required for the construction and working of the line and its accessories, exemption from national, departmental, or municipal duties which exist or may exist in respect of any property possessed by the company for the service of the railway, and the right to construct certain branch lines. The company operated the road until 1922, but indebtedness to the Colombian Government increased each year, so that in July, 1922, an agreement was reached for the sale of the road to the Colombian Government. This agreement was approved by the stockholders of the company in December, 1922. A circular dated December 14, 1922, issued by the company to the stockholders, stated:

These payments—that is, for debenture interest—and other advances made by the Government to or on behalf of the company, interest due on debentures held by the Government, and interest thereon have annually increased until the total debt due to the Colombian Government at the present time exceeds £1,548,000. This state of affairs could not continue, and acting on strongly expressed national feeling the Government has decided that the debt must be paid or the railway handed back to the Government to be managed and conducted as a national enterprise.

In pursuance of this decision the ad referendum agreement of July 31 last was entered into. The effect of this agreement and the subsequent arrangements made with the Government's representatives in London is that the railway, including its lands, buildings, rolling stock, and all other assets, will be transferred by the company to the Government, in consideration of which the latter will bear, pay, and discharge all debts and liabilities of the company, including the outstanding debentures and interest thereon, will release the company from the debt due by it and will also bear the expenses of carrying the agreement into effect. The Colombian Government will not make any payment to shareholders on account of their shares. The result will be that the company will part with all its properties and assets and have no liabilities and may therefore be liquidated or allowed to expire.

According to the Stock Exchange Yearbook for 1923, the financial condition of the road at the time of its transfer to the Colombian National Government was as follows:

In 1913 offers were made by the Colombian Government to the holders of the four classes of debentures to exchange them for 6 per cent bonds of the Government, and these offers were accepted by the bondholders to the extent stated below under each issue of debentures. The railway bonds given up are kept alive by the Government, and their lien on the railway remains in force.

Nine hundred thousand pound shares of £1, fully paid. Of this amount the Government received £300,000.

Two hundred thousand pound 6 per cent first-mortgage registered debentures, issued in October, 1899, at par, secured by a first charge on the whole of the company's undertaking and lands, with interest payable January 1 and July 1, and the principal repayable in whole or in part (now) at any time at 110 per cent, while in the event of the company going into voluntary liquidation the debentures are repayable at not less than 110 per cent. The debentures are in amounts being multiples of £10, and interest on them is now guaranteed by the Colombian Government, being payable at the company's office. It is provided that the company shall, before June 30 and December 31 in each year, pay into such bank as may be nominated by the trustees, to their account, the sum required to provide the half year's interest due July 1 and January 1, respectively, following, any default by the company in meeting these engagements to be immediately made up by the Government. The above is the total authorized.

Interest on the outstanding debentures is being regularly paid by the company. Of the total of £200,000 of these debentures, £192,210 is now held by the Government, the holders of these having accepted the offer made in April, 1913, to exchange for Government bonds, as stated above. As to the terms of the immediate sale of the undertaking to the Colombian Government arranged in 1922, and the provisions thereunder for the redemption of the debentures, see above.

Four hundred thousand pound 6 per cent second-mortgage debentures to bearer of £1 each, of which £100,000 was issued to the concessionaire, and the remaining £300,000 was issued to the contractors in respect of construction work; the interest dates are May 30 (for seven months) and October 30 (for five months), and the debentures are redeemable on October 30, 1929, at 110 per cent, with the right to the company of earlier redemption (subject to the first debentures having been paid off) by drawings at 110, or by purchase at or under 110, while in the event of voluntary liquidation they are redeemable at not less than that price; out of the net profits of the company £14,000 per annum was to be set aside for a sinking fund to provide for the redemption of all the first and second debentures within a period of 30 years. The above is the total authorized, and payments were made at the company's office.

Interest due October, 1909, and since is in arrears. Of the total of £400,000 of these debentures, £398,900 is now held by the Government, the holders of these having accepted the offer made in January, 1913, to exchange for Government bonds, as stated above. As to the terms of the immediate sale of the undertaking to the Colombian Government arranged in 1922, and the provision thereunder for the redemption of the debentures, see above.

Four hundred and thirty thousand pounds sterling 6 per cent third-mortgage debentures (now called customs-guaranteed bonds) of £20 and £100 each, issued to the contractors in 1907, and in respect of construction work; their position was partially altered by a new contract entered into in January, 1908, with the Government, the bonds being now styled 6 per cent customs-guaranteed bonds, and in May, 1908, Messrs. Steer, Lawford & Co., 11 Throgmorton Avenue, E. C. 2, were authorized by the owners of the bonds to offer for sale £350,000 of the issue at 81 per cent. They are secured on the same properties as, but subject to, the first and second debentures, have interest payable March 30 and September 30, and the principal is repayable March 1, 1949, from a sinking fund of not more than £10,000 per annum (as far as the net earnings of the company will permit), which may be applied at any time on one month's notice to purchases in the market below par, or to annual drawings at or above par, while in the event of liquidation the debentures are redeemable at not less than par. Interest is payable at Lazard Bros. & Co. (Ltd.), 11 Old Broad Street, E. C. 2, and is secured by the guaranty of the Colombian Government, contained in two contracts dated March 11, 1907, and January 10, 1908; under the first contract the Government undertook to deposit with bankers in London the sum of £12,900 at least 60 days before each half-yearly date of payment, and by the contract of January 10, 1908, the Government charged 3 per cent of the national customs revenue of the Republic as security for the interest to become due upon the customs-guaranteed bonds until they are paid off or redeemed, any deficiency to be met from the general revenue.

In exchange for the guaranty of interest by the Government on the third debentures the contractors surrendered certain subsidy bonds and also provided £165,000 of shares to bring up the Government holding to one-third of the share capital. Under the arrangement of 1910, by which the Government guaranty was given, no alteration was made in the general rights of the debentures. The above is the total authorized.

Interest is being paid by the Colombian Government, usually on the due date. Of the total of £430,000 of these debentures £242,920 is now held by the Government, the holders of these having accepted the offer made in February, 1913, to exchange for Government bonds, as stated above. As to the terms of the immediate sale of the undertaking to the Colombian Government arranged in 1922 and the provision thereunder for the redemption of the debentures, see above. On January 20, 1923, the company gave notice of intention to redeem these debentures at the expiration of three months.

Four hundred and fifty thousand pounds customs-guaranteed 6 per cent debentures (1908) of £20 and £100 each (called fourth debentures). These debentures were sold by the company in 1908, while in October, 1908, the London City & Midland Bank (now the London Joint City & Midland Bank, Ltd.), Threadneedle Street, E. C. 2, was authorized to receive applications on behalf of Messrs. Dunn, Fisher & Co., 41 Threadneedle Street, E. C. 2, for £250,000 of the debentures at 80 per cent, the coupons of which are payable January 1 and July 1 by Lazard Bros. & Co. (Ltd.), 11 Old Broad Street, E. C. 2, and the remaining £200,000, completing the total authorized of £450,000, was sold in Paris, where interest is payable. For the repayment of the debentures a sum of £4,500 is to be provided annually by the Colombian Government as a sinking fund, not later than November 1 in each year commencing in 1920, such sinking fund to be applied to drawings or to purchases in the open market or otherwise. The Colombian Government guarantees the interest, principal, and sinking fund, and has hypothecated for the purpose 4 per cent of the customs revenue of the country, any deficiency of such 4 per cent to be made good out of the general revenue of the country. The Government has undertaken to deposit a sufficient sum for the half-yearly coupons, at least 60 days before such coupons become due. The amount of the debentures is limited to £450,000. A part of the proceeds of this issue was applied to capitalize the accumulation of arrears of interest on the second debentures, and to reimburse the Government and others for sums paid in respect of previous interest.

Interest is being regularly paid. Of the total £450,000 of these debentures, £439,940 is now held by the Government, the holders of these having accepted the offer made in February, 1913, to exchange for Government bonds, as stated above. As to the terms of the immediate sale of the undertaking to the Colombian Government arranged in 1922, and the provision thereunder for the redemption of the debentures, see above. On January 29, 1923, the company gave notice of intention to redeem these debentures at the expiration of three months.

One million four hundred and twelve thousand six hundred and seven pounds advances by the Government of Colombia as of December 31, 1921.

The accounts are made up annually to December 31, and those for 1921 were submitted in December, 1922. No dividend has ever been paid, and debenture interest has been met chiefly out of advances from the Colombian Government, which amounted on December 31, 1921, to £1,412,607, and on that date there was a debit to net revenue of £875,417, including a debit balance of £793,960 brought down. As to the agreement for the sale of the undertaking to the Colombian Government, see above.

Since the sale of the road to the Colombian Government it has been operated by the Government on a profitable basis. At the present time it has 132 kilometers of main-line track in operation and has no projects for further extension. The road will eventually become a part of the Gran Ferrocarril del Pacifico.

The distance between stations, with running time, is as follows:

	Kilometers	Minutes		Kilometers	Minutes
Girardot to Tocaima	28	56	Anolaima to Zipacon	15	45
Tocaima to Juntas de Apulo	11	22	Zipacon to Facatativa	14	42
Juntas de Apulo to Anapoima	12	24			
Anapoima to La Mesa	22	50	Total	132	--------
La Mesa to Anolaima	30	90			

FINANCES AND TRAFFIC

The following is a statement showing the traffic movement and financial condition of the road for the calendar years indicated:

Years	Number of passengers carried	Freight carried	Head of cattle carried	Gross revenue	Cost of operation	Net revenue
		Kilos		*Pesos*	*Pesos*	*Pesos*
1911	95, 605	25, 500, 559	2, 546	382, 714	293, 307	89, 407
1912	103, 540	47, 579, 196	5, 471	500, 174	251, 433	248, 741
1913	134, 462	66, 023, 805	8, 471	631, 514	288, 335	343, 179
1914	161, 322	68, 761, 736	8, 567	618, 224	393, 174	225, 050
1915	182, 139	73, 863, 392	7, 288	641, 793	333, 982	307, 812
1916	175, 240	81, 277, 875	11, 974	723, 369	426, 939	296, 430
1917	172, 761	77, 386, 007	3, 113	719, 686	434, 759	284, 927
1918	184, 680	94, 467, 484	3, 037	752, 504	435, 635	316, 869
1919	212, 293	98, 396, 116	14, 312	913, 747	458, 786	454, 961
1920	272, 438	109, 592, 347	23, 710	1, 265, 115	593, 380	671, 735
1921	245, 383	111, 896, 785	21, 545	1, 168, 206	754, 748	413, 458
1922	259, 604	116, 775, 350	18, 648	1, 177, 337	659, 940	517, 397
1923	285, 450	135, 796, 753	21, 201	1, 306, 859	742, 794	564, 065
1924	343, 807	143, 327, 418	25, 823	1, 332, 725	595, 257	737, 468

The following is a table showing the operating statistics of the road for the calendar year 1924:

Passengers:		
Number of paid passengers transported		333,560
Number of paid passengers transported for 1 kilometer		18,403,603
Average distance traveled in kilometers by each passenger		55.17
Total revenue paid by passengers	pesos	329,312.52
Average revenue paid by each passenger	do	0.0987
Average revenue paid by each passenger per kilometer traveled	pesos	0.0179
Total revenue from passenger trains	do	334,938.36
Revenue from passenger trains per train-kilometer	do	3.077
Freight:		
Number of tons of paid freight transported		129,235
Number of tons of freight transported 1 kilometer		12,029.86
Number of tons of freight transported 1 kilometer of railway		91,135.33
Average distance in kilometers each ton of freight was transported		93.09
Total freight revenue	pesos	985,432.43
Average revenue paid for each ton	do	7.63
Average revenue paid for each ton per kilometer transported	pesos	0.08191
Revenue from freight per kilometer of railroad	do	7,465.40
Revenue from freight per train-kilometer	do	5.47
Total traffic:		
Total revenue of the railroad	do	1,332,725.26
Revenue per kilometer of railroad	do	10,096.40
Revenue per train kilometer	do	4.94
Operating expenses	do	595,257.51
Operating expenses per kilometer of railroad	do	4,509.53
Operating expenses per train-kilometer	do	2.21
Net revenue	do	437,467.75
Net revenue per kilometer of railroad	do	5,586.87
Average of passengers per car, per kilometer		27.79
Average of passengers per train-kilometer		169.05
Average of passenger cars per train-kilometer		6.09
Average of tons of freight per loaded car per train-kilometer		10.61
Average of tons of freight per train-kilometer		66.75
Average of freight cars per train-kilometer		7.32
Average of loaded freight cars per train-kilometer		6.29
Average of freight cars, empty		1.03
Average of kilometers operated during the year		132
Mileage of locomotives in revenue service:		
Mileage of freight-train locomotives		160,715
Mileage of mixed-train locomotives		19,499
Mileage of passenger-train locomotives		89,368
Total mileage of locomotives in service		269,582
Mileage of freight cars, loaded		1,134,115
Mileage of freight cars, empty		184.955
Total mileage of freight and stock cars		1,319,070
Mileage of passenger cars		662,188
Total mileage of cars in revenue service		1,981,258

OPERATING OFFICIALS AND PURCHASES

At the present time the road is operated by the Government.

Purchases of materials for the different kinds of work of the railway are made by the Dirección General de Ferrocarriles in Bogota through public bids. The general manager's office (gerencia) sends the lists of material, etc., needed to the board of directors (junta directiva), and that body passes the lists on to the Dirección General de Ferrocarriles, which is a section of the Ministry of Public Works. When the materials, etc., are urgently needed, the board of directors authorizes the general manager's office to get them without the intervention of the Dirección General.

RIGHT OF WAY

Altitude.—The altitude on the road at the different stations is as follows:

	Meters		Meters
Girardot	326	Hospicio	1,068
La Virginia	336	La Esperanza	1,285
Tocaima	390	Cachipay	1,632
Portillo	408	Anolaima	1,972
Juntas de Apulo	455	Zipacon	2,495
Anapoima	572	El Chuscal	2,728
San Joaquin	656	Facatativa	2,614
La Mesa	963		

Gauge.—The gauge of the road is 0.914 meter.

Grades.—Between kilometers 70 and 125 from Girardot there is an average grade of 3.43 per cent compensated, with a maximum grade for a distance of 40 kilometers of 4 per cent compensated.

Curves.—The minimum curve radius at kilometer 85 is 57 meters, or 30 degrees; this curve is uncompensated, and there is almost no tangent between it and the next curve. The sharpest curves elsewhere have a radius of 70 meters, but none of them are compensated.

Ballast.—Rock is used as ballast.

Ties.—Ties are spaced 60 centimeters from center to center.

Signaling equipment.—Colored flags and lanterns are used for signaling.

Rails.—Rails weighing 45 and 60 pounds to the yard are used.

Water.—The water supply is good. Water stations are as follows: Girardot, 24,000 liters; Tocaima, 10,000 liters; Apulo, 40,000 liters; San Joaquin, 15,000 liters; San Javier, 34,000 liters; La Esperanza, 14,000 liters; Anolaima, 12,000 liters; Zipacon, 47,000 liters; kilometer 20, 30,000 liters.

Fuel.—Soft coal is used as fuel. An excellent grade of bituminous coal is found at Zipacon, kilometer 120. Fuel stations are located as follows: Girardot, 40 tons capacity; Tocaima, 10 tons; San Javier, 20 tons; La Esperanza, 30.5 tons; Anolaima, 10 tons; Zipacon, 500 tons; Facatativa, 5 tons.

Maintenance.—The roadbed is in excellent condition.

Bridges.—The bridges are located as follows:

One over Rio Apulo; length 30 meters between abutments; steel.
One over Rio Daima; length 12 meters between abutments; steel.
One over Rio Apulo; length 25 meters between abutments; steel.
One over Rio Apulo; length 12 meters between abutments; steel.
Four large viaducts at various places on the line.

Tunnels.—There is one tunnel, 510 feet in length, located at kilometer 115.

Loading and clearance.—The cars have a maximum loading capacity of 20,000 kilos, but usually are not loaded to more than 10,000 kilos. Clearance on the road is limited by the tunnel to 5.5 meters in height, 4.5 meters in width, on a 10-degree curve. Bridges are all higher than the tunnel but only 4 meters wide.

MOTIVE POWER AND ROLLING STOCK

The following is a comparison of the motive power and rolling stock for the calendar years 1915 and 1925:

Motive power and rolling stock	1915	1925	Motive power and rolling stock	1915	1925
Locomotives (Mallet type)	18	25	Freight cars:		
			Box cars	------	66
Passenger cars:			Flat cars	------	43
First class	5	13	Cattle cars	------	16
Second class	4	8	Others	------	20
Third class	5	10			
Others	------	4	Total	53	145
Total	14	35			

In 1926 six auto rail cars were purchased to carry mails and passengers between Bogota and Facatativa.

Westinghouse air brakes are used on the locomotives and hand brakes on the cars.

REPAIR SHOPS

Repair shops are located at Girardot and Facatativa. The shops at Girardot comprise a machine shop, workshop, tin shop, foundry, carpenter shop, paint shop, etc. At Facatativa there is a tin shop and workshop.

TOLIMA RAILROAD

(FERROCARRIL DE TOLIMA)

SURVEY OF DEVELOPMENT

The history of this road dates from August 14, 1892, when its construction was authorized by the Department of Tolima. On February 2, 1893, a contract was entered into with Carlos Tanco to construct a railway extending from Flandes (located on the Tolima side of the Magdalena River) to the town of Ibague. Authorization was also given for the construction of two branches, one extending to the north and one to the south. The contract for the construction of these branches was later rescinded, and they are now separate enterprises. Under this concession approximately 2½ kilometers of track were constructed. Because of difficulties in carrying out this contract, a new one was signed between the original signatories on March 6, 1897; this contract limited the construction of the road to that section between Flandes and Ibague, a distance of 76 kilometers. At the beginning of the revolution of 1899, 17 kilometers of track had been completed and turned over to the Government. The internal conflict paralyzed construction work for some time, and it was not until 1905 that work was again resumed by Señor Tanco. The road was continued from Espinal, kilometer 18, to kilometer 25. On April 23, 1907, Señor Tanco, with the approval of the Government, attempted to transfer all his rights under this contract to the Sociedad Civil de Estudios y Trabajos in Colombia. However, this company was not able to complete the sale according to the provisions specified, so the matter was indefinitely suspended. In the meantime Señor Tanco died, and his trustees reported that it was impossible to continue the operation of the road on account of its run-down condition. The Department then declared the concession void on June 27, 1911.

At this time the Government decided to take over the road, and, after conferences with representatives of the enterprise in 1912, a contract was completed for the purchase of the property at a price of 30,000 pesos. The appropriation for the sale also provided funds to repair the track and rolling stock and again put the road in service. It is estimated that it cost the Government approximately 180,000 pesos for the entire work. In 1913 the Government commenced this work on its own account and assembled an organization, of which Justino Monco was chief engineer. Monco took charge of the construction work, and the line was reconstructed and extended to Chicoral at kilometer 30 on July 6, 1914. In addition, station buildings were repaired and surveys made for the extension of the line to Ibague.

Construction work again lapsed, and it was not until March 1, 1916, under the direction of Engineer Pedro Uribe and his assistants, Jorge Triana and Jorge Holguin, that the extension of the track from Chicoral to Ibague was commenced. Work was carried on until 1918, when it stopped by reason of financial difficulties. Shortly afterwards construction work was recommenced and the road was opened to traffic on January 7, 1921, from Flandes to Ibague, a distance of 76 kilometers.

This railway will be connected with the Girardot Railway when the bridge now under construction across the Magdalena River is completed; with the La Berade Railway by means of the Ibague-Ambalema Railway, which is now being constructed; and will also be extended into the Provinces of Huila and Caqueta by the Tolima-Huila-Caqueta Railway, which is under construction from Espinal. In addition, the branch of the Pacific Railway (see chapter on Pacific Railway) now being constructed between Zarzal and Armenia will eventually be extended to Ibague and the above-mentioned roads will be merged into the Gran Ferrocarril del Pacífico. Incidentally this route will probably afford Bogota its first connection with the seaboard. These roads all have the same gauge of track, namely 0.914 meter. Separate paragraphs are devoted to these roads later in this chapter.

OPERATING OFFICIALS

At the present time the road is government owned and is under control of the Ministry of Public Works. Its manager is Jacinto Caycedo; the engineer and chief of the traffic department is Temistocles Vargas, who may be addressed in care of the road at Flandes.

PURCHASES

Purchases of materials for the different kinds of work of the railway are made by the Dirección General de Ferrocarriles in Bogota through public bids. The general manager's office (gerencia) sends the lists of materials, etc., needed to the board of directors (junta directiva), and that body passes the lists on to the Dirección General de Ferrocarriles, which is a section of the Ministry of Public Works. When the materials, etc., are urgently needed the board of directors authorizes the general manager's office to get them without the intervention of the Dirección General.

FINANCES AND TRAFFIC

The following table shows the road's financial condition and the amount of traffic carried for the years mentioned:

Years	Number of passengers carried	Amount of freight carried	Total revenue	Cost of operation	Net revenue
		Kilos	*Pesos*	*Pesos*	*Pesos*
1922	184,019	17,435,000	200,176	182,760	17,416
1923	183,963	18,809,213	200,231	174,997	25,234
1924	208,315	21,497,341	232,606	187,802	44,804

RIGHT OF WAY

Altitude.—The altitudes of the various stations on the line are as follows:

	Meters		Meters
Flandes	320	Gualanday	521
Espinal	359	Picalena	990
Chicoral	438	Ibague	1,270

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The steepest grade is 3 per cent compensated, and its length is about 8 per cent of the total mileage.

Curves.—The minimum curve radius on the road is 80 meters.

Ties.—Ties are of guayacan, secured locally, 1.80 by 0.2 by 0.18 meters, spaced 0.606 meter on centers, with 1,650 ties per kilometer.

Rails.—Rails of standard A.S.C.E. section, weighing 35, 45, and 55 pounds to the yard in 33-foot lengths, are used.

Water.—The water supply is good. There are six steel tanks at stations along the right of way, at all of which water may be secured. These are Flandes (8,000 liters), Espinal (4,400 liters), Chicoral (13,500 liters), Gualanday (9,750 liters), Picalena (18,000 liters), and Ibague (6,300 liters).

Fuel.—Coal obtained from a station on the Girardot Railway is used for fuel. It is necessary to transport the supply by mule back across the Magdalena River on a little suspension bridge. There is one fuel station, located at Flandes.

Ballast.—The ballast used is crushed stone.

Signaling equipment.—Colored flags and lanterns are used for signaling.

Clearance.—Clearance is limited to 4 by 6 meters.

Maintenance.—The line is kept in condition to handle rolling stock weighing 10 tons per axle.

Bridges.—There are nine steel bridges.

Tunnels.—There is one tunnel on the road, 60 meters in length, having reinforced concrete walls and arch.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in use on the road at the end of the calendar year 1925 were as follows:

Locomotives:	
Size, 0–4–2; weight, 13 tons	2
Size, 2–6–0; weight, 45 tons	1
Size, 2–8–0; weight, 50 tons	1
Size, 0–6–6–0; weight, 66 tons	5
Total	9
Passenger cars:	
First class	4
Second class	5
Total	9
Freight cars:	
Box cars	8
Flat cars	9
Cattle cars	2
Total	19

Link-and-pin couplers 22 inches from top of rail are used.

Westinghouse air brakes are used on the locomotives and hand brakes on the cars.

There is one repair shop, constructed of steel, at Flandes.

TOLIMA-HUILA-CAQUETA RAILWAY

(FERROCARRIL DE TOLIMA-HUILA-CAQUETA)

SURVEY OF DEVELOPMENT

Originally the construction of this railway was contemplated as a branch line of the Ferrocarril de Tolima. The contract for the construction of the Tolima Railway, which also authorized the construction of the above railway as well as the Ambalema Railway, was later rescinded.

On July 14, 1919, the firm of Pedro A. Lopez & Co. executed a contract with the government of the Department of Tolima to construct a railway extending from the town of Espinal to the Caqueta region. Construction work commenced shortly after the plans were approved by the Government, and 10 kilometers of track were soon completed and opened to public service. The Department then found it impossible to fulfill the promises made to the company for additional construction, and accordingly the work was abandoned. In 1922 the Government purchased the railway, inclusive of the 16 kilometers that had been constructed between Espinal and El Guamo, at a cost of 1,017,000 pesos. Under Government auspices construction of the railway was carried on, and in July, 1925, the road was opened as far as Catufa on the Saldana River, a distance of 30 kilometers from Espinal. At the present time it is proposed to construct this line from Catufa to Natagaima, Golondrinas, and Neiva, a total distance of 163 kilometers from Espinal. Later it will be constructed to the head of navigation in the Caqueta River.

On February 27, 1926, the Government signed a contract with Norton Griffiths & Co. (Ltd.), of London, England, for the construction necessary for the completion of the railway. A copy of this contract follows:

Between the undersigned, to wit: Laureano Gomez, Minister of Public Works, duly authorized by His Excellency the President of the Republic, on the one hand, who hereafter shall be called "the Government" in this contract, and Frank A. Koppel, male, of age, citizen of Bogota, in his capacity as the empowered delegate of the construction firm Norton Griffiths & Co. (Ltd.), London, on the other hand, who hereafter shall be referred to as "the contractors," bearing in mind the authorization of article *e* of the Law 89 of 1922, reading: "The Government is authorized to contract a loan intended to be used for the construction of the said railroad either directly by the administration or by construction contracts. Further, the work may be finished with the extraordinary receipts that the nation may require"; the contract has been signed on the basis of the following clauses:

I. The contractors expressly obligate themselves toward the Government in respect of the following:

(*a*) To construct and administer, for the account of the Government. an approximate extension of 130 kilometers of the Tolima-Huila-Caqueta Railroad, between the Saldana Station and the city of Neiva, including the completion of the surveys and locating of the line, together with the preparation of the specifications and respective estimates of expenses.

(*b*) To complete this work to the point of its delivery to the public service within a period of not more than two and a half years, reckoned from the final approval of the plans.

(*c*) To give themselves diligently to the execution of the said work, in efficient and practical manner, administering it economically, under the personal supervision of their agents and employees.

(*d*) To begin the construction of the work in question within two months following the approval of the plans and estimates by the Government, provided that the latter may make the necessary funds available.

(*e*) To execute, to complete, and deliver the work conformable to the plans and specifications to be approved by the Ministry of Public Works.

(*f*) To submit monthly to the general comptroller of the Republic the expense accounts, duly verified and systematically arranged.

(*g*) To deliver to the administration of the Tolima-Huila-Caqueta Railroad such portions already constructed as in the judgment of the Ministry of Public Works may be given over to the public service.

(*h*) To keep books in Spanish, very detailed and carefully arranged, in which shall be properly classified all expenses that may have been occasioned, together with all discounts, rebates, and bonuses that for any reason whatever may have been obtained.

(*i*) To keep a very complete system of statistics permitting one to readily establish the exact cost of each kilometer of railroad construction, the cost of every piece of tunnel work and the unit value, for removing earth, making excavations, doing rubblework, etc.

(*j*) To purchase with the greatest care and economy, and in the best possible conditions from every point of view, the materials and objects that, as a matter of course, must be secured within the country, working in agreement with the supervising engineer.

(*k*) To submit, from time to time, for the examination of the Government, the lists of equipment, materials, and objects that must be purchased abroad, it being understood that this must be done with due foresight, in such manner as will permit of competition wherever this may be possible.

(*l*) To put the bookkeeping of the enterprise into the hands of the chief accountant to be designated by the Government. To permit the supervising engineer to be appointed by the Government to have access to and become acquainted with all the departments of the enterprise, even to their most minute details.

(*m*) To permit the Government or its officials or other persons it may designate to visit the enterprise and its dependencies at any time, affording them all kinds of facilities for inspection.

(*n*) To honor and pay, in accordance with the laws in force relative to this matter, indemnities to employees and workmen for accidents resulting in the course of the work and from collective insurance.

(*nn*) To deliver to the Government, upon the completion of the work or upon the lapsing of this contract for any reason whatever, all the books and statistics, all the plans, profiles, maps, and any other objects of study; in short, all things that may be said to constitute the archives of the enterprise. In any one of these cases the contractors shall be permitted to extract any data they may regard as useful.

(*o*) To construct the work in the conditions required, for a sole compensation of 7¾ per cent of the actual cost of the work, including the expenses incurred for the surveying and localization of the line but excluding the cost of materials purchased abroad, such as cement, rails, bridges, machinery, iron structural pieces, rolling stock, etc.

(*p*) To pay from the funds of the enterprise the wages of the chief accountant and the supervising engineer, as well as the wages and salaries of the entire personnel engaged in the work.

(*q*) To submit to the approval of the Ministry of Public Works the list of the personnel and their assignments in the enterprise, together with any changes that may be made therein.

(*r*) To hand to the Ministry of Public Works the necessary plans with all indispensable data to prosecute the work of expropriation.

(*s*) To forward monthly to the Ministry of Public Works, and at the proper opportunity, a detailed report of the progress of the work so as to permit of an estimation of the true condition thereof.

(*t*) To engage preferably, for the work under way and on a parity of conditions, Colombian personnel; the percentage of said personnel shall not be less than 90 per cent with regard to workmen and not less than 70 per cent as regards the administrative and technical personnel. Nevertheless, the Government shall be free to lower these percentages in case circumstances require this.

II. The Government obligates itself toward the contractors as to the following:

(*a*) To provide conveniently to the contractors the necessary funds for the construction of the work to which this contract refers. For practical purposes the cost of said work is evaluated approximately at the sum of 4,000,000 pesos, which shall be delivered by the Government proportioned over the time; that is to say, over two and one-half years that have been fixed as the period in which the work shall be completely finished.

(*b*) To give to the contractors all the necessary support for the realization of the work, putting them into possession of lands, funds, and indispensable materials, and in a general way affording them all facilities conducive to an economical and rapid construction.

(*c*) To give the contractors, by way of remuneration, 7¾ per cent of the actual cost of the work, including the value of the surveys and tracings, but excluding the cost of all foreign materials purchased abroad through the medium of the Ministry of Public Works. Payment of this remuneration shall be made monthly, within the first 15 days of the month following that to which the settlement refers. The expenses upon which the percentage is stipulated shall be verified from the system of bookkeeping kept by the chief accountant and certified by the supervising engineer of the Government.

(*d*) To empower the contractors to control and direct all things referring to the construction of the work and to select, appoint, engage, employ, and discharge the personnel of employees and workmen. Their salaries must be on a par with those paid usually by the Government for work similar to this and under conditions similar to such work.

(*e*) To extend the period of duration of this contract in case of a strike or fortuitous cases or force majeure that may have substantially interrupted the progress of the work or because of the shortage of materials that the Government may have supplied at a late date. The extension will be of a period equal to the duration of the interruption referred to and an additional 50 per cent.

(*f*) To fully afford to the contractors time for them to purchase with the greatest economy and under the best conditions from every point of view, materials and articles that because of their nature must be acquired within the country, provided always that this is effectuated in agreement with the supervising engineer of the Government.

(*g*) To grant to them the free use of the telegraph and postal service for all business related to the work contracted for.

(*h*) In due time to secure the inclusion of the respective annual amount in the law of appropriations so that this contract may be carried out.

(*i*) To pay to the contractors 8 per cent annual interest on such sums as, for any reason whatever, it may have been found necessary to pay in advance.

III. The Government shall appoint the chief accountant of the enterprise and a supervising engineer; their salaries shall be paid from the funds destined to the construction of the work. These two employees shall be under the direct orders of the Ministry of Public Works, and all the rest of the employees shall be under the direct orders of the contractors.

IV. Expenses incurred for bringing to the place of work or returning from the place of work, and any other conditions of the contracts for foreign personnel brought from without the country for this work, shall be mutually agreed upon between the Government and the contractors. In like manner, matters shall be arranged in case possible expenses are incurred abroad.

V. If, before the termination of all the service and estimates of the part of the line contracted for, it is deemed expedient to begin the work of construction, such course may be followed provided it is previously approved by the Ministry of Public Works and in agreement with the contractors.

VI. Inasmuch as at the present time that part of the line situate between the Saldana Station and the village of Natagaina is under construction, this part shall be handed over to the contractors in the condition in which it now exists on the day when the said contractors find themselves able to begin the work of construction.

VII. Although, for practical purposes, the amount of 4,000,000 pesos has been set as the total approximate cost of this work, this fact in no way obligates the Government with reference to the amount of the commission of the contractors, which commission refers solely to the actual cost of the work, within the limits established in this contract.

VIII. Any difference in the execution or interpretation of the clauses of this contract, excepting matters of a technical nature, shall be submitted to arbitration, in which case the Government and the contractors shall each name one of the arbitrators and the two arbitrators thus appointed shall name a third arbitrator in case of disagreement. The arbitrators shall proceed in the manner of friendly composers; they shall remain free from any formality to be observed, and the decision of the arbitral tribunal shall be final. The same arbitral decision shall indicate the apportionment of the expenses occasioned by the said arbitration.

IX. The Government shall push legal judgments of expropriation for acquiring the zones and lots of land necessary for the construction of the line and its annexes. The expenses incurred in the course of such acquisitions shall be borne by the treasury of the enterprise; but such amounts shall not be taken into account with regard to the commission to which the contractors are entitled.

X. This contract may not be transferred to any other person or entity, national or foreign, without the previous expressed approval of the Government; and in no case may it be transferred to any foreign government or nation.

XI. In addition to what is specified under article 41 of the fiscal code the following shall be sufficient causes for the lapsing of the contract:

(*a*) When the contractors have not submitted to the approval of the Ministry of Public Works the plans and estimate of the part of the railroad contracted for within six months following the final approval of this contract.

(*b*) When in the course of the execution of the work, the contractors stop operations for more than 30 days without proper cause, in the judgment of the Government. If the contractors do not accept this judgment, the matter shall be adjusted by the arbitral tribunal.

(*c*) When the construction operations do not begin within two months following the approval of the plans and estimates for the line on the part of the Ministry of Public Works.

(*d*) The defective organization of the enterprise and of the construction operations so that in the judgment of the Government and of the arbitrators the work will visibly entail high cost.

(*e*) When the work is not, fully constructed, delivered within two and a half years fixed therefor, unless for proper reasons duly verified and accepted.

(*f*) In case the contractors do not in due time submit their accounts in the form and for the periods specified in the first clause of this contract.

(*g*) When the bond to which reference will be made hereinafter shall not have been deposited by the contractors within the stipulated period.

XII. In order to insure the faithful fulfillment of their obligations and make themselves responsible for the funds that the Government will in due time furnish for the purpose of the work contracted for, the contractors, so soon as this contract shall have been finally approved, will furnish a pledge guaranty, in action or in internal debt bonds, in the amount of 50,000 pesos. This bond must have been furnished within 60 days following the final approval of this contract.

XIII. This contract will go into effect on the 1st day of January, 1926, or from the date of the said year in which it is finally approved.

XIV. This contract shall become valid only provided the respective shares in the national budget of expenses are appropriated and, in virtue of such appropriations, the office of the comptroller general of the Republic issues the proper certification.

XV. For the purposes of this contract, by enterprise is meant the work of construction of the Tolima-Huila-Caqueta Railroad in that part of it included between the Saldana station and the city of Neiva. When this contract shall have been legally approved, it shall be forwarded to the office of the comptroller general of the Republic for the purpose of having it properly certified and recorded in a public document.

For these purposes the present contract is signed in duplicate of the same tenor, in the presence of witnesses, at Bogota, on November 18, 1925.

(Signed) LAUREANO GOMEZ.
FRANK A. KOPPEL.

Witnesses:

DARIO BOTERO.
LUIS EMIRO MEJIA.

In these conditions the two contracting parties, in view of the suggestions offered by the ministerial council, agree to add the following to the present contract:

Paragraph *j* of clause I shall be modified to read as follows:

"(*j*) To purchase with the greatest economy, and under the best conditions from every point of view, the materials and articles which by their nature must be secured from within the country, collaborating with the supervising engineer and in conformity with the fiscal laws and the regulations to be issued upon this matter."

New clause.—The contractor expressly declares that for all the purposes of the present contract he submits to the Colombian laws and to the jurisdiction of the national courts; and that he expressly renounces his right to enter any diplomatic claim with regard to the rights and obligations resulting from this contract, except in the case of denial of justice. It is to be understood that there shall be no denial of justice inferred when the contractor has exhausted all recourse and means of action that according to the Colombian laws may be resorted to before the judicial power.

New clause.—By administrative decree the Government may declare that the present contract has lapsed in any one of the cases specified in clause II added to the agreement.

For these purposes the preceding addition is signed at Bogota on December 11, 1925.

(Signed) LAUREANO GOMEZ.
FRANK A. KOPPEL.

FINANCES AND TRAFFIC

The following table shows the traffic movement and the financial condition of the road for the year 1922 and the periods April 24 to December 31, 1923 and 1924:

Years	Number of passengers carried	Kilos of freight carried	Gross revenue	Operating expenses	Net profit or loss
			Pesos	*Pesos*	*Pesos*
1922	45,384	1,333,089	13,238	14,151	−913
1923	55,574	2,026,811	19,718	24,837	−5,119
1924	50,937	2,223,063	17,418	16,033	+1,385

OPERATING OFFICIALS AND PURCHASES

At the present time the road is owned by the Government. The section which has been completed is operated in connection with the Ferrocarril del Tolima.

Purchases of materials for the different kinds of work of the railway are made by the Dirección General de Ferrocarriles in Bogota through public bids. The general manager's office (gerencia) sends the lists of materials, etc., needed to the board of directors (junta directiva), and that body passes the lists on to the Dirección General de Ferrocarriles, which is a section of the Ministry of Public Works. When the materials, etc., are urgently needed, the board of directors authorizes the general manager's office to get them without the intervention of the Dirección General.

RIGHT OF WAY

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The maximum grade on the road is 2¼ per cent compensated.

Curves.—The radius of the minimum curve on the road is 300 meters.

Rails.—Rails weighing 60 pounds to the yard are used.

Fuel.—Coal is used as fuel.

Water.—The water supply is fair.

IBAGUE-AMBALEMA RAILWAY

(FERROCARRIL DE IBAGUE-AMBALEMA)

SURVEY OF DEVELOPMENT

Originally the construction of this railway was contemplated as a branch line of the Ferrocarril de Tolima. The contract for the construction of the Tolima Railway, which also authorized the construction of the above railway as well as the Tolima-Huila-Caqueta Railway, was later rescinded. On July 10, 1919, the Department of Tolima contracted with Pedro A. Lopez & Co. for the construction of a railway which was to connect Ambalema, the terminus of the La Dorada Railway, with the Ferrocarril de Tolima at some place between Picalena and Sesteadero, a distance of approximately 73 kilometers. No work was done by this firm, and the concession was voided. The Department then undertook the construction and named the town of Gualanday as the connecting point with the Tolima Railway. This road will eliminate the boat haul on the upper Magdalena River and provide through service from La Dorada to Bogota upon the construction of the bridge across the Magdalena River connecting Flandes with Girardot.

Under departmental direction approximately 20 kilometers of roadbed were graded and 6 kilometers of rails were laid from Ambalema, but work stopped in July, 1923. At that time the La Dorada Railway offered to extend its road from Ambalema by a bridge across the river at that point to Girardot on the opposite side—a route which was approximately 65 kilometers shorter than the route of the above road. The Department, however, did not accept the proposal of the company. The contract with the originating firm was abrogated by mutual agreement on March 13, 1924, and the Department acquired the railway with all its property and buildings and allowed the contractors the sum of $180,582. At the present time no work is being carried on, although it is expected that within a short time construction work will commence.

OPERATING OFFICIALS

The road is owned by the Department of Tolima. For information regarding the road, the director of public works of the Department should be addressed at Ibague.

RIGHT OF WAY

Gauge.—The gauge of the road is 0.914 meter.
Grades.—The maximum grade of the road is 1 per cent compensated.
Curves.—The minimum curve radius is 110 meters.
Rails.—Rails weighing 60 pounds to the yard are used.
Fuel.—Coal is used as fuel.
Water.—The water supply is fair.

SOUTHERN RAILWAY

(FERROCARRILL DEL SUR)

SURVEY OF DEVELOPMENT

The history of this railroad dates from January 30, 1903, when a company was incorporated for its construction. The company was capitalized for £100,000, in shares of £7 each, and attempted to issue bonds, but because of legal difficulties was unable to market them. In 1905 the Colombian Government purchased the railway for 60,000 pesos. On March 1, 1926, the road had 30 kilometers of track in operation between Bogota and Santa Isabel and a branch of 5 kilometers from Chisaco to Tequendama. The road is now being extended to Tequendama Falls, a distance of 4½ kilometers. On October 27, 1923, the National Congress allotted 600,000 pesos for the extension of this road to Fusagasuga. This money was to be taken from the American indemnity fund, but it is regarded as extremely doubtful whether this amount will be available after money previously allocated for other railroad construction has been taken. As of March 15, 1926, the right of way for the construction of this extension had not as yet been determined, although several rights of way have been surveyed. Recently the Government has made overtures to the Department of Cundinamarca in an effort to secure entire control of the Cundinamarca Railway in exchange for this road. The first overture was rejected, but it was reported in the first part of 1926 that the project had been reopened.

OPERATING OFFICIALS

The road is owned and operated by the National Government. The manager appointed by the Government is in direct charge of the road. The main office of the company is in Bogota.

FINANCES

The following table indicates the revenues and expenses of the road for the calendar years noted:

Years	Revenues	Expenses	Net income
	Pesos	*Pesos*	*Pesos*
1922	162, 426	134, 647	27, 779
1923	170, 348	141, 781	28, 567
1924	169, 367	133, 193	36, 174

TRAFFIC

The traffic movement over the road for three calendar years is shown in the following table:

Years	Passengers carried	Freight carried
	Number	*Kilos*
1922	266, 464	59, 849, 356
1923	366, 058	65, 730, 658
1924	386, 573	73, 382, 261

PURCHASES

Purchases of materials for the different kinds of work of the railway are made by the Dirección General de Ferrocarriles in Bogota through public bids. The general manager's office (gerencia) sends the lists of materials, etc., needed to the board of directors (junta directiva) and that body passes the lists on to the Dirección General de Ferrocarriles, which is a section of the Ministry of Public Works. When the materials, etc., are urgently needed, the board of directors authorizes the general manager's office to get them without the intervention of the Dirección General.

RIGHT OF WAY

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grades on the road are 1½ per cent compensated on the main line and 3½ per cent on the Chusaca-Tequendama branch.

Curves.—The minimum curve radius on the road is 80 meters.

Ballast.—The road is rock ballasted and heavily graded.

Ties.—Ties are spaced 20 inches from center to center.

Rails.—Rails weighing 40 pounds on the main line and 60 pounds on the branch line are used.

Water.—Water is secured locally. Location and capacity of water tanks are as follows:

	Liters		Liters
Bogota (two)	14,000	Santa Isabel	15,000
Chamisera	3,500	Alicachin	3,000
Bosa	3,000	El Charquito	5,000

Lighting.—Of the rolling stock in use on the road 7 first-class cars are equipped with three electric lights each, 4 second-class cars with two electric lights each, 7 third-class cars with four electric lights each, 3 baggage cars with two electric lights each, 3 animal cars with one electric light each, and 12 cattle cars with oil lights. All of the electric lights are of 25 watts.

Fuel.—Coal is used for fuel. Fuel stations are located at Bogota and Tequendama.

Signaling equipment.—No automatic equipment is in use. Colored flags and lanterns are used for signaling.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in use on the road at the end of the calendar year 1925 were as follows:

Locomotives	10	Freight cars:	
Passenger cars:		Box cars	16
First class	7	Flat cars	37
Second class	4	Cattle cars	7
Third class	6	Total	60
Mixed	1		
Total	18		

There is one repair shop, located at Bogota.

SANTA MARTA RAILWAY

(FERROCARRIL DE SANTA MARTA)

SURVEY OF DEVELOPMENT

The history of this road dates from 1881, when a concession was granted by the State of Magdalena to Robert A. Joy and Manuel J. de Mier to construct a railroad from Santa Marta to a point near the east bank of the Magdalena River. Under this concession 21.7 miles of track were laid, extending from Santa Rosa to the town of Cienaga. In 1890 the road was sold to the Santa Marta Railway Co. (Ltd.), an English corporation, which has operated it from that time. The road has long been the source of controversy, and as early as 1915 efforts were made by the Government to purchase the road. The Santa Marta Railway Co. (Ltd.) claimed that the Government had no right to purchase the road, basing its action on a new concession which validated the old concession. However, the matter was argued in court, and on November 30, 1925, in a decision by the Supreme Court it was ordered that the Government should take over the road after having an appraisal made of it. At the present time the appraisal is being made by engineers, and it is presumed that when a report is submitted to the Government an agreement will be reached whereby it will be taken into the national railway system. Since the road was taken over by the Santa Marta Railway Co. (Ltd.), it has been extended until in 1925 it had approximately 107 miles of track in operation. In addition, it operates 11½ miles of branch lines owned by the United Fruit Co.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road are as follows (the address in each case being Santa Marta, Colombia):

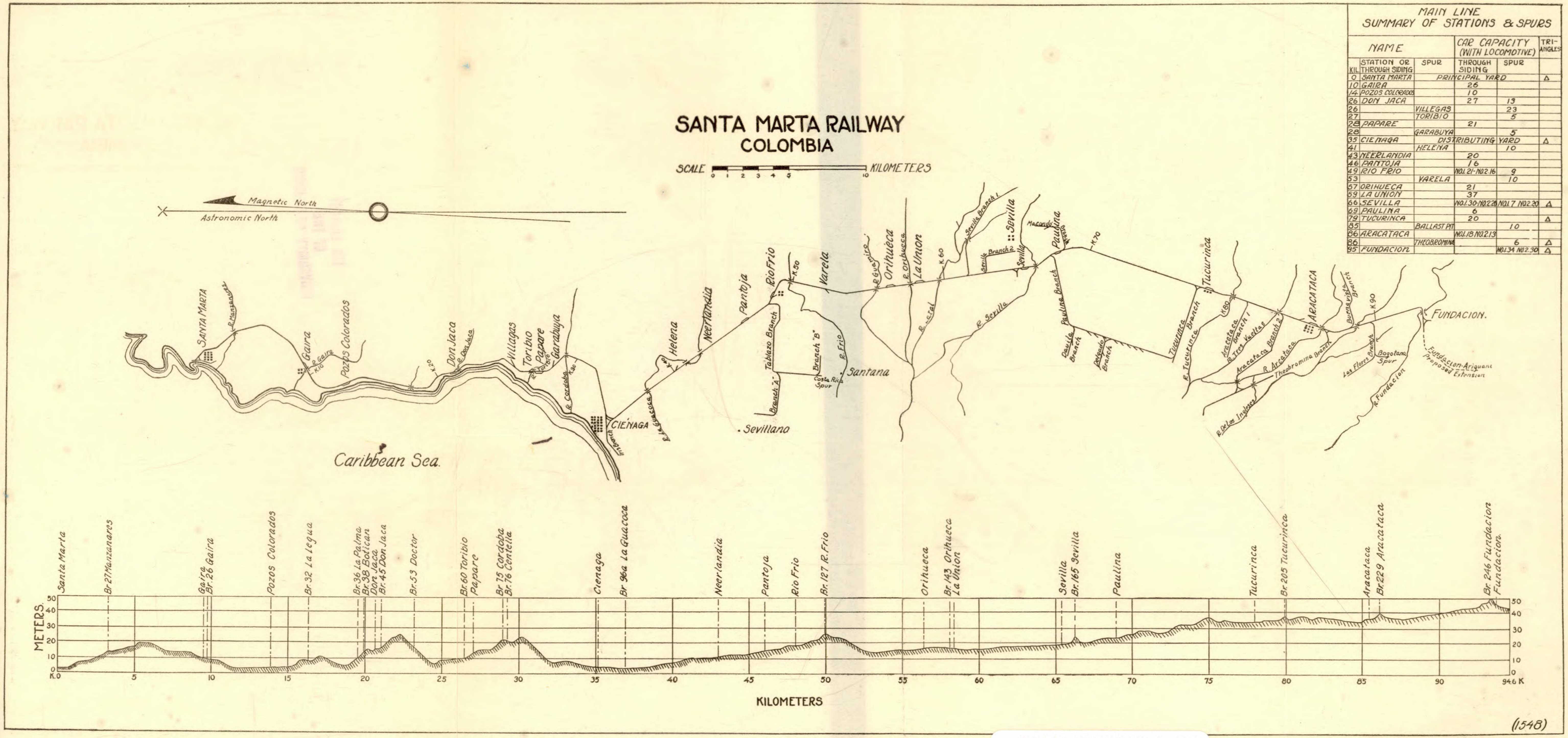
General manager, F. G. Maidment.
Assistant general manager, E. A. Olin.
Traffic superintendent, W. J. Meagher.
Chief engineer, W. W. Franklin.
Master mechanic, H. Wood.
Accountant, George Hodkinson.

Purchases are designated by the general manager and master mechanic and made through the purchasing officer, J. H. Thompson, 90 West Street, New York City.

FINANCES

According to the Stock Exchange Yearbook for 1925 the authorized share capital is as follows:

> The authorized share capital is £600,000, of which £359,170 has been issued and all but £10 paid up, and the authorized borrowing powers of £3,000 per mile of railway have been exercised to the extent of £289,100, of which £230,800 is outstanding.
>
> Two hundred thousand pounds ordinary shares of £10, fully paid, the total authorized, ranking for capital and 7 per cent, noncumulative dividend after the preferred shares, and participating equally with the latter in surplus profits and assets.
>
> One hundred and fifty-nine thousand one hundred and sixty pounds preferred shares of £10, fully paid, part of £400,000 authorized, ranking first for noncumulative dividend of 7 per cent, and after payment of a similar rate on the ordinary, participating equally with the latter in surplus profits, and entitled to priority for capital, participating pari passu with the ordinary shares in surplus assets after repayment of the latter. All except seven preferred shares were issued as fully paid.
>
> Two hundred and thirty thousand eight hundred pounds 6 per cent first-charge debentures of £100 each, balance outstanding of £289,100, with interest payable January 1 and July 1 and the principal repayable at par by January 1, 1950, by a cumulative sinking fund of 1 per cent per annum, applicable to annual drawings in January (commenced in 1908), or to purchases when under par, while the company has reserved power to redeem the whole or any part of the debentures outstanding at any time at par on giving three months' notice. The debentures are secured by trust deed (trustees, Maj. the Hon. A. P. Henderson and H. W. Henderson), as a first specific charge on the railway and real property in Colombia and as a first floating charge on the undertaking and other assets. Quoted in the official list; latest price, 90.
>
> The accounts are now made up annually to December 31 and submitted about May. There has so far been no dividend on either class of shares, but the service of the debentures has been duly met. Debit to net revenue at December 31, 1923, £164,525, including a debit of £102,211 brought into the accounts. The assets also include discount and expenses on debenture discount and expenses on debenture issue, £41,646.



SANTA MARTA RAILWAY
COLOMBIA

MAIN LINE SUMMARY OF STATIONS & SPURS					
NAME			CAR CAPACITY (WITH LOCOMOTIVE)		TRI-ANGLES
KIL.	STATION OR THROUGH SIDING	SPUR	THROUGH SIDING	SPUR	
0	SANTA MARTA	PRINCIPAL YARD			Δ
10	GAIRA		26		
14	POZOS COLORADOS		10		
26	DON JACA		27	13	
26		VILLEGAS		23	
27		TORIBIO		5	
28	PAPARE		21		
28		GARABUYA		5	
35	CIENAGA	DISTRIBUTING YARD			Δ
41		HELENA		10	
43	NEERLANDIA		20		
46	PANTOJA		16		
49	RIO FRIO		NO.1. 21-NO.2. 16	9	
53		VARELA		10	
57	ORIHUECA		21		
59	LA UNION		37		
66	SEVILLA		NO.1. 30-NO.2. 26	NO.1. 7 NO.2. 20	Δ
69	PAULINA		6		
79	TUCURINCA		20		Δ
85		BALLAST PIT		10	
86	ARACATACA		NO.1. 18 NO.2. 13		
86		THEOBROMINA		6	Δ
95	FUNDACION			NO.1. 34 NO.2. 30	Δ

FIG. 4a

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There is shown below a comparison of the financial condition of the road for the years ended September 30, 1913, and December 31, 1924. The balance sheet as of September 30, 1913, was as follows:

	£	s.	d.	£	s.	d.	£	s.	d.
Dr.:									
Capital authorized—									
20,000 ordinary shares of £10 each				200,000	0	0			
40,000 7 per cent preferred shares of £10 each				400,000	0	0			
							600,000	0	0
Capital issued—									
20,000 ordinary shares of £10 each [1]				200,000	0	0			
15,917 7 per cent preferred shares, £10 each	159,170	0	0						
Less call unpaid	10	0	0						
				159,160	0	0	359,160	0	0
6 per cent first charge debentures—									
Issued to Sept. 30, 1912				199,500	0	0			
Further issue to Sept. 30, 1913				500	0	0			
				200,000	0	0			
Less debentures redeemed and canceled to date				11,800	0	0			
							188,200	0	0
6 per cent first charge debenture redemption account, representing debentures redeemed to date							11,800	0	0
Debenture interest accrued to Sept. 30, 1913							2,658	6	6
Bills payable							1,500	0	0
Sundry creditors and credit balances							83,593	2	6
Revenue account—									
Balance as at Sept. 30, 1912				21,439	12	2			
Balance of net revenue for year to Sept. 30, 1913				1,922	17	10			
							23,362	10	0
Total							670,273	19	0
Cr.:									
Cost of railway and concession and expenditure on construction works to Sept. 30, 1912				564,111	15	9			
Further expenditure to Sept. 30, 1913				2,196	3	5			
							566,307	19	2
Discount on 6 per cent first charge debentures and expenses of issue (including £6,282 10s. discount and commission in respect of debentures issued subsequently to July 1, 1908)							30,795	12	0
Stores on hand and in transit							28,169	10	6
Sundry debtors and debit balances							36,607	16	2
Cash at bank and in hand—									
London				943	7	2			
Colombia				1,012	1	9			
New York				3,137	12	3			
In transit				3,300	0	0			
							8,393	1	2
							670,273	19	0

---

[1] £25,000 of the above ordinary share capital does not appear on the company's register pending the completion of certain legal formalities.

Following is the balance sheet at December 31, 1924:

		£	s.	d.	£	s.	d.
Dr.:							
Capital authorized—							
20,000 ordinary shares of £10 each		200,000	0	0			
40,000 7 per cent preferred shares of £10 each		400,000	0	0			
					600,000	0	0
Capital issued—							
20,000 ordinary shares of £10 each		200,000	0	0			
15,917 7 per cent preferred shares of £10 each	£159,170						
Less call unpaid	10						
		159,160	0	0			
					359,160	0	0
6 per cent first charge debentures		289,100	0	0			
Less debentures redeemed and canceled to date		65,500	0	0			
					223,600	0	0
6 per cent first charge debenture redemption account, representing debentures redeemed to date					65,500	0	0
Sundry creditors and credit balances					590,062	4	9
Total					1,238,322	4	9
Cr.:							
Cost of railway and concession and expenditure on construction works to Dec. 31, 1923		803,030	12	1			
Further expenditure to Dec. 31, 1924		12,780	7	11			
					815,811	0	0
Discount on 6 per cent first charge debentures and expenses of issue (including £15,192 10s. discount and commission in respect of debentures issued subsequently to July 1, 1908)					41,646	7	8
Stores on hand and in transit					71,468	4	3
Sundry debtors and debit balances					7,077	18	2
Cash at bank and in hand—							
London		19,916	0	8			
Colombia		387	2	0			
New York		964	9	7			
					21,267	12	3
Revenue account—							
Balance, being loss at Dec. 31, 1923		164,525	6	9			
Add balance of net revenue account, being loss for year ended Dec. 31, 1924		116,525	15	8			
					281,051	2	5
Total					1,238,322	4	9

Following is the revenue account for the year ended September 30, 1913:

Dr.:	£	s.	d.
Maintenance and renewals of permanent way and works	53,033	12	4
Traffic expenses	41,778	5	1
Locomotive maintenance	5,998	16	11
Carriage and car maintenance	3,554	9	0
Steamboat service	6,424	17	6
Administraton expenses, Colombia	8,567	15	6
Directors' and trustees' fees, secretary's salary, legal and London office expenses	823	1	10
Balance carried to net revenue account	19,690	19	4
Total	139,871	17	6

Cr.:

	£	s.	d.
Passenger traffic	20,991	10	3
Banana traffic	101,193	11	2
Merchandise	13,992	8	10
Wharf receipts	3,210	15	7
Sundry receipts	483	11	8
Total	139,871	17	6

The revenue account for the year ended December 31, 1924, is shown below:

Dr.:

	£	s.	d.
Maintenance and renewals of permanent way and works	79,558	13	4
Traffic expenses	156,297	0	11
Locomotive maintenance and renewal account	26,212	3	15
Carriage and car maintenance and renewal account	29,726	13	3
General administration expenses, Colombia	28,031	15	11
Directors' and trustees' fees, secretary's salary, and London office expenses	1,279	1	2
Reserves for doubtful debts, loss on exchange, etc	8,158	19	4
Total	329,264	7	4

Cr.:

	£	s.	d.
Passenger traffic	44,511	16	8
Banana traffic	162,799	3	2
Merchandise	33,688	15	1
Wharf and river service receipts	7,588	8	2
Sundry receipts	807	17	4
	249,396	0	5
Balance carried to net revenue account	79,868	6	11
Total	329,264	7	4

Following is the net revenue account for the year ended September 30, 1913:

Dr.:

	£	s.	d.
Debenture service fund	14,000	0	0
Income tax	270	4	8
Interest	3,497	16	10
Balance carried to balance sheet	1,922	17	10
Total	19,690	19	4

Cr.:

	£	s.	d.
Balance of revenue account	19,690	19	4

The net revenue account for the year ended December 31, 1924, is shown below:

Dr.:

	£	s.	d.
Balance of net revenue account	79,868	6	11
Debenture service fund	20,237	0	0
Interest	16,420	8	9
Total	116,525	15	8

Cr.:

	£	s.	d.
Balance, being loss for year to date, per balance sheet	116,525	15	8

TRAFFIC STATISTICS

The following statement shows the number of passengers and kilos of freight carried for the years ended September 30, 1922, 1923, and 1924:

	1922	1923	1924
Passengers carried	431,193	490,465	616,666
Freight carried kilos	60,609,000	277,051,535	347,582,000

RIGHT OF WAY

Altitude.—The road runs from 3 feet above sea level to 162 feet, the highest point on the line.

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The maximum grade is 1.25 per cent for a distance of 1 mile. (At some river bridges short stretches of as much as 3 per cent grades rise from the level to give sufficient flood clearance.)

Curves.—The minimum curve radius is 100 meters.

Ballast.—The ballast used is of soft gneiss.

Ties.—Ties of native hardwood, 7 feet by 5½ by 8½ inches, spaced 27 inches apart, are used on the road. The average life of these ties is 14 years.

Rails.—Standard A. S. C. E. rails, in 30-foot sections, are used. The rail profiles have the following dimensions, according to size:

	60 pounds	40 pounds	30 pounds
	Inches	*Inches*	*Inches*
Height	4¼	3¼	3
Width	2⅓	1¾	1⅝
Flange	4¼	3¼	2¾
Tread	2	1½	1⅜

Water.—The water supply is good. Water stations are located as follows:

Santa Marta, three tanks—
24,609 gallons capacity.
37,500 barrels capacity.
11,500 barrels capacity.
Kilometer 10, 2,937 gallons.
Kilometer 35, 20,654 gallons.
Kilometer 48, 2,937 gallons.
Kilometer 49, 13,817 gallons.
Kilometer 66, 5,875 gallons.
Kilometer 86, 8,000 gallons.

There is no need for extra tenders to carry water.

Fuel.—Oil is used as fuel. At the present time there are no plans for change in fuel. Fuel stations are approximately 30 kilometers apart.

Signaling equipment.—Colored flags, lanterns, and whistles are used for signaling. All movements are controlled by telephone.

Clearance.—Clearance on the principal bridges is limited to 15 feet 9 inches in height and 13 feet 9 inches in width.

Maintenance.—The roadbed and track are kept in sufficiently good condition to accommodate as heavy traffic as they were designed to carry.

Bridges.—There are two bridges on the road averaging 600 feet in length.

Tunnels.—There are no tunnels on the line.

MOTIVE POWER AND ROLLING STOCK

A comparison of the motive power and rolling stock in use on the road at the end of the calendar years 1913 and 1924 is presented on the page following.

LOCOMOTIVES[1]

Wheel arrangement	Weight, in working order	Size of cylinders	Number	
			1913	1925
	Tons	*Inches*		
2-4-0	12	8 by 14	1	1
4-4-0	18½	9⅜ by 16	2	4
0-4-0	10	9⅜ by 14	2	2
0-4-2	26	12 by 18	6	6
2-6-0 (tender engines)	52½	15 by 20	6	7

[1] In addition to the locomotives enumerated in the table there are two of which the description is unknown.

CARS

Types	1913	1925
Passenger cars	17	29
Baggage cars	2	4
Freight cars	30	292
Fruit cars	118	
Miscellaneous cars	69	
Total	236	325

COUPLERS

Combined buffer and drawbar couplers 2 feet 3 inches in height are used. A hook coupler attached to drawbar with two chain hooks is used.

LIGHTING

Of the rolling stock in operation 6 first-class cars, 12 second-class cars, and 6 miscellaneous cars are electrically lighted. A steam-driven combined set on locomotives with cars connected with flexible cables is the method for supplying the current. The equipment used is all of American manufacture, and it is estimated to cost approximately $400.

REPAIR SHOPS

The repair shops are located at Santa Marta and Cienaga, where approximately 158 mechanics and laborers are employed. The shops consist of a machine and blacksmith shop, boiler shop, carpenter shop, foundry, and car repair shop, and have a total floor area of 14,400 square feet. The following equipment is in use in the shops:

2 gap lathes, 22-inch centers, 12-foot bed.
1 wheel lathe, 7 feet between centers for 48-inch wheels.
1 lathe, 11-inch centers, 5-inch bed.
1 planer.
2 shapers.
1 48-inch hydraulic wheel press.
1 locomotive hoist, 25 tons.
2 Le Blond lathes, 16 inches, 9 and 12 foot bed.
Miscellaneous saws, plate roll, drilling machines, radial drills, steam hammer, etc.
Capacity of cupola in foundry, 2 tons. No overhead lifting gear to handle heavy castings.

Equipment for the shops is selected by the master mechanic, H. Wood, and purchased through the purchasing agent in New York City.

NARINO RAILWAY (UNDER CONSTRUCTION)

(FERROCARRIL DE TUMACO-IPIALES-PASTO)

Construction of this railway was provided for by Law 62 of 1923, which is as follows:

Article 1. The Government shall proceed at once to execute by direct administration the survey of construction of the Tumaco-Ipiales-Pasto Railway. The survey shall be made on the ground, and shall comprise the verification of the route made and the examination of another convenient route by which this railway Tumaco-Ipiales-Pasto may pass, if possible, by the city of Barbacoas.

Art. 2. For the construction of the railway mentioned in the preceding article, the Government shall authorize an administrative board in a form similar to that which operates the Pacific Railway. Said board shall be composed of three principal members, with their corresponding substitutes, who shall be called the "executive power," selected from lists of three presented by the departmental assembly of Narino. Until the assembly meets, the Government shall freely make the designations. The term for the members of the board shall be for two years, counting from the date of installation.

Art. 3. For the expense of construction of the railway mentioned in the present law, there shall be appropriated the sum of 600,000 pesos, minimum, per annum, which the Government shall take from each one of the second, third, fourth, and fifth payments of the North American indemnity.

Art. 4. If, with the total sum of the payments allotted by this law to the construction of the Tumaco-Ipiales-Pasto Railway, the Government is not able to prolong it to its terminus, it shall, in agreement with the board and in conformity to the plan of national loans, negotiate for the acquirement of the necessary funds to complete the work within the shortest time possible.

Art. 5. The foregoing articles amend article 15 of Law 102 of 1922.

Art. 6. This law shall take effect from the date of its approval.

As of March 1, 1926, construction work is under way and approximately 16 kilometers of track have been graded; $206,000 of the American indemnity fund has already been spent on the undertaking. Eventually the road will be connected with Popayan on the Pacific Railway and will become a part of the trunk system of the Gran Ferrocarril del Pacífico. The road is being constructed under Government auspices, and purchases of material will be made in the manner designated in the introductory paragraph of this chapter.

CARARE RAILWAY (UNDER CONSTRUCTION)

The construction of this railway was provided for in Law 66 of 1923. The railway was to extend from Tunja to Puerto Aquileo on the Carare River, passing through Moniquira and Valez. Construction work was inaugurated in April, 1925, and on December 31, 1925, 10 kilometers of roadbed were graded and ready for the rails. The road is supervised by the administrating committee provided for by law and is being constructed by the Government. Purchases are made through the Government office at Bogota as described on page 33. Up to the present time approximately $287,490 of the American indemnity fund has been spent on its construction.

CENTRAL RAILWAY OF BOLIVAR (UNDER CONSTRUCTION)

The Department of Bolivar has had under consideration for some time the construction of a railway which would extend from Cartagena to Canafistula on the boundary of the Department of Bolivar and Antioquia and from there extend to Bolombole. At this point the road will connect with the Antioquia Railway, the proposed

Medellin-Gulf of Uraba line, and eventually with the Gran Ferrocarril del Pacífico. In Government reports the section of the road fron Canafistula to Bolombole is spoken of as the Ferrocarril Troncal de Occidente. On December 11, 1924, the Governor of the Department of Bolivar authorized the issuance of a loan for the construction of this railway. Up to February, 1926, only 135,750 pesos was subscribed for this loan, and during the same period approximately 234,148 pesos was granted in subsidies to the Department by the National Government. It is understood that the National Government will reimburse the subscribers through the Department loan and has already appropriated 100,000 pesos for this purpose. The National Government will carry on the construction of the railway. As of February 31, 1926, approximately 15 or 20 kilometers of road bed were completed. In the meantime the Cartagena Railway is opposing the construction of this road on the basis that it violates the contract given it by the Government for the construction and operation of its railway. The Minister of Public Works states that this claim is baseless and that the construction of the road will be continued.

CUNDINAMARCA RAILWAY

(FERROCARRIL DE LA SABANA)

SURVEY OF DEVELOPMENT

The history of this railroad dates from the time before Bogota was connected with the Magdalena River at Girardot by the Girardot Railway. Rails and rolling stock were transported from the river on mules at excessive costs. Construction of this road first started in 1882, but was stopped by the war of 1885 after approximately 17 kilometers of track had been laid. In 1886 work was again commenced, and in 1889 the road was completed from Bogota to Facatativa, a distance of 55 kilometers. The original concession was valid for 75 years, or until 1951, when the property was to revert to the Department of Cundinamarca. The road was originally capitalized for 1,000,000 pesos, but in 1888 this sum was increased to 1,200,000 pesos, represented by 12,000 shares of 100 pesos each. Of this amount the Department of Cundinamarca subscribed to 6,000 shares, the National Government to 5,990, and a native citizen to the remaining 10 shares.

On April 26, 1898, the Department of Cundinamarca sold 6,000 shares to the National Government, which, however, failed to provide the necessary funds for their purchase; a board of arbitration awarded judgment to the Department of Cundinamarca of 325,000 pesos in March, 1905. In addition, the sale agreement entered into in 1898 was abrogated. On December 31, 1921, an agreement was entered into between the Department of Cundinamarca and the Government whereby a company was organized known as the Ferrocarril de Cundinamarca. Under the terms of this contract the road was to be jointly operated, and additional construction was to be carried on out of the net profits. This company was capitalized at 10,000,000 pesos—100,000 shares of 100 pesos each—and, according to the agreement, was valid for a period of 30 years, at the end of which time the original Sabana railway from Bogota to Facatativa was to become the property of the Department of Cundinamarca.

The remaining sections, which include the extension from Facatativa to El Dintel and the new construction to the river, were to become the joint property of the nation and the Department of Cundinamarca, in proportion to their investments. The Government agreed to relieve the Department of any responsibility in connection with a loan of £300,000 contracted in London in 1906, for which the Government has pledged the railway.

The road has since been extended to El Dintel, a distance of 8 kilometers, so at the present time the road has 63 kilometers of track in operation. In 1925, at a cost of 50,000 pesos, the gauge was changed from 1 meter to 0.914 meter, so that it now corresponds to the Ferrocarril de Girardot. In addition, approximately 300,000 pesos worth of rolling stock was turned over to other Government railroads of 1-meter gauge. It is proposed to connect this road with the Magdalena River at a point called Palanquero, which is approximately 2 kilometers below La Dorada. At the present time the Department is endeavoring to secure a loan of 3,000,000 pesos for the completion of this project. It is estimated that this will be sufficient for the work, together with the subvention of 20,000 pesos per kilometer as authorized by the National Government in Article V of Law 80 of November 6, 1923. Recently the Government has made overtures to the Department in an effort to secure entire control of this railway in exchange for the Ferrocarril del Sur, which at the present time is owned by the Government. The first overture was unsuccessful, but it was reported in the first part of 1926 that the project had again been reopened.

FINANCES AND TRAFFIC

The following is a statement of the freight and passengers carried by the road for the calendar years 1898 to 1924, inclusive:

Years	Number of tons	Number of passengers	Revenue	Cost of operation	Net revenue
			Pesos	*Pesos*	*Pesos*
1898	50,462	331,862	113,008	78,036	34,972
1899	45,817	327,186	105,894	78,445	27,449
1900	38,890	182,874	29,352	29,373	−21
1901	50,582	221,446	30,406	23,363	7,043
1902	43,250	270,301	50,610	31,742	18,868
1903	45,357	432,206	96,522	68,390	28,132
1904	52,911	456,320	146,225	111,053	35,172
1905	52,210	440,680	184,449	125,943	58,506
1906	55,782	377,827	211,455	124,844	86,611
1907	64,618	407,670	230,963	124,273	106,690
1908	66,824	389,318	232,229	121,176	111,053
1909	66,847	383,567	227,949	128,877	99,072
1910	74,936	410,393	243,059	142,404	100,655
1911	75,347	372,836	263,254	142,773	120,481
1912	76,663	378,311	283,503	165,410	118,093
1913	90,150	408,306	301,814	138,697	163,117
1914	94,938	460,949	289,564	152,178	137,386
1915	92,597	442,475	278,055	154,147	123,908
1916	102,595	544,193	307,211	169,762	137,449
1917	116,499	644,164	329,052	167,598	161,454
1918	123,809	760,218	331,756	161,222	170,534
1919	118,685	916,095	376,769	233,996	142,773
1920	136,077	967,363	482,681	286,975	195,706
1921	139,832	926,522	469,733	266,361	203,372
1922	138,172	1,122,507	486,773	305,668	181,105
1923	174,366	1,028,036	526,480	297,871	228,609
1924	183,042	1,277,444	550,159	343,482	206,677

Following is the balance sheet of the Cundinamarca Railway as of December 31, 1924:

ASSETS

	Pesos
Various claims	2,038,743
Warehouse	93,063
Additions and improvements	216,898
Extension of Cundinamarca Railway to Bajo Magdalena via La Tribuna	107,317
Bills and installation expenses	178,885
Cash	6,946
Remittances due	2,465
Extension of Cundinamarca Railway to Bajo Magdalena (Dintel)	632,234
Total	3,276,551

LIABILITIES

Capital	1,200,000
National Government, its subsidy to extension	491,907
Cundinamarca government, its subsidy to extension	491,907
Reserves	493,806
Reserve fund	138,542
Current accounts	263,565
Profit and loss	196,824
Total	3,276,551

The Sabana Railway account includes:

	Pesos
Machinery	51,078
Rolling stock	534,775
Aqueducts and lighting	20,651
Telegraph and telephone	3,909
Real estate	858,213
Line and its annexes	570,117
Total	2,038,743

The warehouse account includes value of tools, furniture, and implements.

The following statement shows the total traffic of the railway during the calendar year 1924:

SECTION FROM BOGOTA TO FACATATIVA

Passengers carried	number	1,277,444
Freight carried	tons	183,000
Cattle carried	number	6,265
Sheep carried	do	1,562
Gross operation receipts	pesos	550,159
Operation expenses	do	282,743
General expenses	do	60,739
Total expenses	do	343,482
Net revenue	do	206,677

BRANCH TO EL DINTEL

Passengers carried	number	12,607
Freight carried	tons	8,904
Cattle carried	number	41
Sheep carried	do	3
Gross income from operation	pesos	10,749
Operation expenses	do	20,603
Net loss	do	9,854

OPERATING OFFICIALS AND PURCHASES

The road is managed by a political board of directors (junta directiva), the Minister of Finance being ex officio president of this junta. The general manager is appointed by the president, but he generally follows the desires of the Department of Cundinamarca in the matter of appointment to this office.

The operating officials of the road for the calendar year 1925 were as follows:

President	the Minister of Finance.
Manager	Marceliano Vargas.
Secretary	Jose Posada Tavera.
Traffic manager	Percy Brandon.
Resident engineer	Justino Monco.
Director of shops	Anacarsis Lara.
Accountant	Camilio H. Castrellon.

Purchases are made by competitive bidding on specifications prepared by the technical department of the administration. The office of the company is in Bogota, and the secretary should be addressed in reference to information regarding purchases.

RIGHT OF WAY

Gauge.—The gauge of the road, formerly 1 meter, was changed to 0.914 meter in 1925.

Grades.—The maximum grade between Bogota and Facatativa is 2 per cent, while between Facatativa and Dintel it is 3 per cent.

Curves.—The minimum curve radius on the road is 200 meters.

Ballast.—The roadbed is well ballasted with dirt. Little rock ballast is used, but the road is well ditched.

Ties.—Wooden ties, 1.80 meters by 0.15 meter by 0.18 meter are used. Recently an order has been placed for steel ties.

Rails.—American rails of 60 and 75 pounds per yard and English rails of 45 colored flags and lanterns are used.

Water.—The water supply is excellent and is secured from neighboring streams. Water stations are located at Bogota (tank 33,000 liters), Tres Esquinas (tank 8,000 liters), and Facatativa (tank 38,000 liters).

Fuel.—Bituminous coal is used for fuel. Fuel stations are located at Bogota (200 tons), La Cascajera (500 tons), and Facatativa (600 tons).

Clearance.—Clearance on the road is limited to 4 meters in height and 5 meters in width.

Signaling equipment.—At Bogota there is a movable semaphore; otherwise colored flags, and lanterns are used.

Maintenance.—The roadbed is in good condition.

Bridges.—There is one small steel bridge over the Rio Bogota between Funza and Fontibon.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

The following is a statement of the motive power and rolling stock for the calendar year ended December 30, 1925:

Locomotives:	
Baldwins	12
Mallets (new)	2
Porters	3
Black Hawthorn	1
Chemnitz	2
Total	20

Passenger cars:	
First class	12
Second class	8
Third class	15
Total	35
Freight cars:	
Box cars	26
Flat cars	33
Cattle cars	11
Total	70

LIGHTING

Six of the locomotives are equipped with headlights of 110 volts and two locomotives with headlights of 32 volts. The president's car has 26 electric lights; 14 first-class cars are equipped with 9 electric lights each, 8 second-class cars with 6 electric lights each, 16 third-class cars with 5 electric lights each, 4 baggage cars with 3 electric lights each, and 4 animal cars with 2 electric lights each. The 32-volt turbines in use on the rolling stock have not the power to light the train satisfactorily, but are preferred for the locomotives. There are no belt turbines in use.

REPAIR SHOPS

The shops are located at Bogota, where all repairs are made. They comprise machine, blacksmith, foundry, and carpenter shops.

CALDAS RAILWAY

(FERROCARRIL DE CALDAS)

SURVEY OF DEVELOPMENT

The history of this road dates from December 2, 1911, when the Department of Caldas entered into an agreement with the National Government for the construction of a railway which was to connect Manizales, the capital of the Department, with a navigable port on the Cauca River, a distance of 112 kilometers. This port has now been designated as Puerto Caldas. Under an agreement the Department organized a committee to formulate plans for the construction of this railway. The committee was composed of the Governor and secretary of the Department and the chief engineer of the project. Under the direction of the committee two surveys were completed. An effort was made to secure a loan for the construction of this road, but the first attempt failed. The Department then decided to proceed with the construction out of such funds as were available. Shortly after this construction work was commenced by the Department of Caldas. The road was completed and opened to traffic to La Marina, a distance of 8 kilometers, on June 20, 1917. In July, 1920, the line was extended to Villegas, a distance of 22 kilometers, in November it was opened to Belmonte (29 kilometers), and on August 7, 1921, to Pereira, a distance of 39 kilometers. On October 12 of the same year the road was opened to Gutierrez, a distance of 48 kilometers from Puerto Caldas. On April 17, 1922, a branch was constructed and opened to traffic between Puerto Caldas and Cartago.

As of December 31, 1925, the road had 66 kilometers of main-line track in operation, extending from Puerto Caldas to Guayabito, and 2 kilometers of branch track between Puerto Caldas and Cartago. On March 5, 1926, the Department secured a loan of $6,000,000 from New York banking firms, Blythe, Witter & Co. and Baker, Kellogg & Co. The proceeds of this loan are to be used for the further construction of this railway and in addition for the construction of the Quindio Railway, which is to extend from Nacederos to Armenia, and the construction of cableways from Manizales to Aquadios and also to Choco and to La Dorada. Work on the road is being rapidly pushed, there being approximately 1,500 men employed on the project at the present time. It is expected that the road will be completed to Manizales, a distance of 46 kilometers from Guayabito, by the end of 1926.

OPERATING OFFICIALS AND PURCHASES

The members of the directing council are named below:

- Principals:
  - Sinforoso Ocampo G.
  - Francisco Jaramillo O.
  - Daniel Restrepo Escobar.
  - Eduardo Pelaez L.
- First substitutes:
  - Agustin Gutierrez.
  - Ricardo Jaramillo Arango.
  - Roberto Salazgar J.
  - Nepomuceno Mejia.
- Second substitutes:
  - Daniel Gutierrez y Arango.
  - Rafael Jenaro Mejia.
  - Luis Toro V.
  - Olimpo Montes C.

The relations and division of powers of the various departments and employees of the railroad are shown below. This arrangement has been approved by the directing council. It will be noted that the authority for making purchases is divided among two or three of the officials:

Legislative branch: Departmental assembly.

Directing branch: Directing council.

Administrative branch: The superintendent. Functions: Direction of the administrative section; correspondence; outside requests; supervision of expenses, regulation of all services, claims for damages and accidents, appraisal of shipments, etc.

Technical branch: Chief engineer. Functions: Direction of the technical section; inspection of plans, surveys, construction works, construction in general, maintenance; collaboration on the subject of outside requests, etc.

The following are under the superintendent:

The treasurer with two assistants and a porter. Functions: Secretary and the directing council; accounting; company indebtedness; auditing of accounts; correspondence; providing funds for the administration, etc.

The manager, with an official of statistics and an assistant. Functions: Supervision and payment of the personnel and receipts for equipment and services; rendering of accounts for the treasurer, chief of traffic, traffic statistics.

Under the manager:

Paymasters for construction work; station agents and ticket sellers; mechanics and traffic crews, train conductors.

The chief of the shops. Functions: Building, inspection, and preservation of the rolling material, mechanics in general, foundry, carpenter work, repairs and construction of tools, erecting buildings, etc.

Under the chief of the shops:

An assistant secretary, the machinists, founders, carpenters, mechanics, and brakemen when not in active service and working in the shops.

The material chief, an assistant, and four laborers. Functions: Purchasing of all classes of material and its shipment to the various shops, etc., of the railroad; accounting for storehouses; inspection and supervision over all tools, instruments, and utensils in use, etc.

Under the material chief: Three sectional storehouse men.

Under the chief engineer:

A draftsman, the maintenance chief, with an inspector, foreman, and laborers used for maintenance work. Functions: Maintenance of the track and buildings; purchase and receipt of material needed for this purpose, and for construction; shipping of same, purchase and transportation of fuel, additions and improvements to the track, buildings, etc.

The division engineers, who supervise the section chiefs, and the section chiefs, supervising the assistants and inspectors of construction, the foremen, watchmen, toolmakers, and laborers. Functions: Grading the road, construction work, laying rails, and ballasting the track in preparation for the maintenance section.

The surveying engineers, who supervise their assistants and the chainmen. Functions: Surveys, preliminary estimates, sketch and localization of the line, making plans, estimates, etc.

The statistical branch and the medical service are connected with the administrative and technical departments.

The superintendent serves as a connection between the maintenance and construction work of the shops, the general storehouses, and the traffic, so far as regards the transportation of material. In addition, he executes all orders given by the directing council, and is the organ of communication for all the employees.

FINANCES

The following is a statement of the receipts and expenses of the road for the calendar year 1924:

Receipts	Pesos	Expenses	Pesos
Available on Jan. 1, 1924	111, 267	Paid to department treasury	50, 000
By national subsidy	55, 000	For general expenses	20, 450
By interest	12, 086	For branch to Quindio	4, 277
By tax on tobacco	681, 110	For interest	92, 586
Revenues from traffic	298, 731	Railroad, first division	182, 698
Internal loan	730, 000	Railroad, second division	621, 703
Fines and profits	2, 925	Railroad, third division	83, 953
Branch at Cartago	10, 000	Departmental roads	30, 104
Premium on stamped letters	4, 141	Current accounts	288, 121
Declared returns	3	Cattle	15, 093
Cash	159	Customs duties	3, 040
		Foreign materials	238, 532
		Available on deposit	157, 247
		Cash	31, 786
		Pending accounts	85, 832
Total	1, 905, 422	Total	1, 905, 422

TRAFFIC STATISTICS

The following table indicates the amount of traffic and net profit of the road during the years mentioned:

Years	Number of passengers and cattle carried	Passenger and cattle receipts	Number of pieces of freight	Kilos of freight carried	Freight receipts	Express and miscellaneous receipts	Total gross receipts	Cost of operation	Net profits
		Pesos			*Pesos*	*Pesos*	*Pesos*	*Pesos*	*Pesos*
1917	11, 038	1, 031	17, 427	1, 004, 919	1, 098	12	2, 141		
1918	27, 299	2, 468	80, 741	5, 559, 653	5, 228	133	7, 829		
1919	32, 523	3, 416	108, 604	7, 598, 206	11, 724	2, 018	17, 158		
1920	43, 025	7, 035	134, 942	9, 347, 798	25, 089	1, 413	33, 537		
1921	107, 265	36, 230	271, 096	18, 912, 113	86, 259	1, 588	124, 177		
1922	213, 780	73, 321	257, 550	17, 337, 400	85, 064	4, 645	162, 930	92, 898	70, 032
1923	282, 259	99, 924	423, 139	28, 086, 077	136, 324	706	236, 455	133, 336	103, 119
1924	331, 393	119, 598	499, 755	33, 199, 628	167, 769	1, 775	289, 141	137, 777	151, 364
Total	1, 048, 582	343, 023	1, 793, 254	121, 045, 794	518, 555	12, 292	873, 370	364, 012	324, 515

NOTE.—The traffic began July 29, 1917; August, 1917, to January, 1919, traffic over 10 kilometers; January, 1919, to July, 1920, traffic over 15 kilometers; July to November, 1920, traffic over 22 kilometers; November, 1920, to Aug. 7, 1921, traffic over 29 kilometers; Aug. 7, 1921, to Oct. 12, 1922, traffic over 39 kilometers; Oct. 12, 1922, to Dec. 31, 1924, traffic over 48 kilometers. The Cartago branch was put in service Apr. 17, 1922.

RIGHT OF WAY

Altitude.—The altitude of the various towns along the road is as follows:

	Meters		Meters
Puerto Caldas	900	Santa Rosa	1, 670
Pereria	1, 390	San Francisco	1, 390
Gutierrez	1, 450	Manizales	2, 100
Boqueron	1, 750		

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade is 3 per cent compensated.

Curves.—The mimimum curve radius is 70 meters.

Ties.—Ties are spaced 23 or 24 inches on centers. They are approximately 1,550 ties per kilometer.

Rails.—Rails weighing 55 pounds to the yard, in 30-foot sections, are used.

Water.—The water supply is good. Water stations are located at Puerto Caldas, Villegas, Pereira, and Gutierrez, with capacity of 26,000 liters; at kilometer post No. 19, with 1,500 liters; and at kilometer post No. 29, with 2,000 liters.

Fuel.—Coal is used for fuel at the present time. A survey was recently made by E. W. Wilson, an electrical engineer, for the installation of electricity. In his report he stated that the electrification of the road would permit a maximum grade of 5 per cent, and, as a result of this, the length of the line would be reduced approximately 20 kilometers between Pereira and Manizales. If electric cars of alternating current or electric locomotives of direct current are used, the estimated cost of installation would vary between 3,251,477 pesos in the former case and 3,775,879 pesos in the latter, while the operating expenses would vary between 184,815 pesos in the former and 198,265 pesos in the latter. In either event it would be less than the operating cost of steam traction. Another factor that favors the construction of an electric road is the abundance of water available in that region.

Clearance.—Clearance on the road is limited to 2.7 meters.

Signaling equipment.—Flags and lanterns are used for signaling.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in use on the road at the end of the calendar year 1925 are shown in the following tables:

LOCOMOTIVES

Class	Type	Weight *Tons*	Manufacturers
2-4-2	Mogul	14	Baldwin Locomotive Works.
2-6-0	do	35	Do.
2-6-0	do	45	Glover Machine Works.
2-6-0	do	45	Baldwin Locomotive Works.
2-6-0	do	45	Do.
2-8-2	Mikado	53	American Locomotive Co.
2-6-2	Prairie	27	Baldwin Locomotive Works.
2-8-2	Mikado	53	American Locomotive Co.
2-8-2	do		Baldwin Locomotive Works.

ROLLING STOCK

Class	Number	Weight of each car, in kilos	Passenger capacity	Cargo tons capacity	Head-of-cattle capacity
Passenger cars, first class	4	10,000	144		
Same, ordered	2		72		
Passenger cars, second class	8	10,000	320		
Same, ordered	2	10,000	96		
Box cars	17	8,600		243	
Same, ordered	2	11,000		40	
Cattle cars	7	10,000			120
Gondola cars	2	10,000		40	
Same, ordered	2	10,000		40	
Flat cars	16	10,000		160	
Same, ordered	4	10,000		80	
Dump cars	15	2,000		[1] 60	
Bullion cars	2	2,000		24	
Push cars	14	300	140		
Automobiles	1	950	16		
Gasoline inspection cars	1	600	6		
Velocipedes	2	45	3		
Total	104		797	[2] 627	120

[1] Cubic meters. [2] Tons.

All rolling stock is equipped with air brakes.

Repair shops are located at Puerto Caldas and Pereira.

ANTIOQUIA RAILWAY

(FERROCARRIL DE ANTIOQUIA)

SURVEY OF DEVELOPMENT

On May 28, 1864, the Department of Antioquia authorized the construction of a railway from Medellin to a navigable point on the Magdalena River. However, it was not until February 14, 1874, that the Department of Antioquia entered into a contract with Señor Cisneros for the construction of a railway to connect Aguasclaras with Puerto Berrio. Under this agreement the road was to be completed in eight and one-half years and the Department was to pay a subsidy of 11,000 pesos per kilometer of track constructed, the total amount of which was not to exceed 2,000,000 pesos. By this agreement the State would acquire one-third of the stock of the company. This contract was modified on January 7, 1875, so that the Federal Government became a contracting party along with the Department of Antioquia. On August 20, 1879, the itinerary of the road was changed to run from Medellin instead of Aguasclaras, and it was agreed that the company was to operate the enterprise for 55 years (at the end of which time it would become the property of the State) and that two-thirds of the stock issued was to be held by the contractor and one-third by the Department. Other minor conditions were also enumerated. Further difficulties arose, so that on May 2, 1882, a new contract was signed at Medellin, in which were summarized all the stipulations of the agreement of August 20, 1879, and the time limit for the completion of the line was extended until 1894. Under the new arrangement the Department was to contribute 11,000 pesos per kilometer, which was one-third of the cost price per kilometer constructed. The line was opened from Puerto Berrio to La Melena, a distance of 13 kilometers on January 21, 1880, and extended to Sabaletas on December 24, 1882. On May 2, 1882, a new contract replaced that of August 20, 1879, and imposed on the State of Antioquia the duty of amortizing, by monthly installments of 5,000 pesos, from July 1, 1882, up to the time of their complete amortization, the bonds issued by the State in favor of the enterprise. The line was opened to Pavas, 47 kilometers, on January 1, 1885.

Because of political conditions, the Department found it necessary to amend the contract under which the railroad was being constructed and to that end entered into a new contract with Señor Cisneros on August 18, 1885, by which contract the previous one was annulled and the enterprise transferred to the Department, including all the rights and stocks issued, for the sum of 500,000 pesos.

On November 12, 1885, the railway line between Puerto Berrio and Pavas, a distance of 47 kilometers, together with all assets of the company, were turned over to the Department.

On February 27, 1888, the departmental government contracted with Charles S. Brown for the completion of the construction of this railway. The contract called for a subsidy of 5,000 pesos in gold per kilometer, constructed and provided that the total subsidy should not exceed 800,000 pesos. Work was to commence in 90 days after date and to be completed within a period of 6 years. The privilege of operating the railway for a period of 85 years was granted the contractor. In order to promote this enterprise, the National Congress passed a law in 1888 authorizing the Government to purchase shares in the enterprise of 1,000 pesos for each kilometer constructed between Pavas and Medellin; the contract, however, fell through, and on July 25, 1888, the departmental assembly authorized the Antioquia Government to conclude a contract with a national or foreign firm that might obligate itself to carry out the work on such basis as might be agreed upon. Under this arrangement a contract was entered into with the firm of Punchard, Paggart, Lowther & Co. on April 27, 1892, for the construction of this railway. Construction work did not progress as fast as the Department desired, and, as the work accomplished under this contract was unsatisfactory, the Department ceased to fulfill its end of the obligations of the contract with the above firm. On June 23, 1893, a representative of the concessionaires informed the National Government of the difficulties the Department had put in the way of the company and requested its intervention in order to settle them satisfactorily. In 1895 this matter was settled by an arbitral court which met in Switzerland and awarded the contractors £40,000.

In the meantime the railroad passed into the hands of the Department. In 1896 a national law was passed authorizing a subsidy of 10,000 pesos per kilometer for the construction of this railway. In 1898 the road was in operation as far as Kilometer 66. As a result of the civil war of 1899 all construction work ceased, and upon its close, in 1905, practically all rolling stock, buildings, and other equipment of the enterprise had been destroyed.

During this year the Government passed a resolution which nationalized all railways in Colombia and accordingly took over the construction and operation of this railway. The Government contracted on February 29, 1905, with James F. Ford, an English contractor, to complete the construction of the road. The contractor succeeded in transferring the concession to an English syndicate, but was unable to comply with certain conditions contained in the concession, and accordingly the contract was abrogated on April 7, 1908. The Department of Antioquia, which had never fully sanctioned the Government's taking over its railway, succeeded in 1909 in regaining possession of the road. The road was opened from Puerto Berrio to Limon, a distance of 118 kilometers, in 1910. It was then decided to continue the construction of the road on the other side of La Quiebra mountain range; work was commenced at Santiago in the direction of Medellin, and on March 10, 1914, the entire road was opened to traffic a distance of 72 kilometers.

For the calendar year ended December 31, 1925, the road had 190 kilometers of track in operation, one section of which extends from Medellin to Santiago, a distance of 72 kilometers, and is known as the Porce division, while the remaining track connects Limon with Puerto Berrio, a distance of 118 kilometers, and is called the Nus division. In March, 1926, the Department authorized the immediate construction of the section between Santiago and Limon, a distance of 9 kilometers, and ordered that 3,000,000 pesos of the recently contracted 20,000,000 pesos railway loan, be used for this purpose. This section, known as the "La Quiebra division," necessitates the construction of a tunnel 3,600 meters in length. It is at this point that the road crosses the continental divide. There is a macadamized wagon road, 3½ meters in width, with a total surface of 5 meters, extending around this mountain. The construction of this tunnel and the completion of the Cauca Railway will afford through train service without transfer from Puerto Berrio to the Cauca River.

OPERATING OFFICIALS AND PURCHASES

The enterprise is in the hands of the departmental assembly and administered by a committee composed of three members and presided over by the Governor of Antioquia. The central office of the enterprise is divided into four sections—(*a*) the Porce division, (*b*) the Nus division, (*c*) the La Quiebra section, and (*d*) the construction section.

For information regarding purchases for this road, address the Junta de Ferrocarril de Antioquia, Medellin, Colombia.

FINANCES AND TRAFFIC

A summary of the financial accounts and traffic movement will be found in the following table:

Years	Freight carried	Number of passengers carried	Revenue	Cost of operation	Net revenue
NUS DIVISION	*Kilos*		*Pesos*	*Pesos*	*Pesos*
1911	20, 544, 504	58, 104	363, 932	287, 595	76, 337
1912	33, 410, 747	75, 010	517, 696	265, 929	251, 767
1913	38, 526, 253	85, 127	590, 278	342, 454	247, 824
1914	38, 707, 840	105, 886	530, 683	321, 258	209, 425
1915	39, 489, 096	104, 941	524, 341	231, 167	293, 174
1916	56, 030, 483	135, 845	718, 048	287, 907	430, 141
1917	55, 444, 851	258, 709	582, 600	337, 730	244, 870
1918	58, 777, 476	320, 758	481, 630	321, 776	159, 854
1919	78, 922, 410	345, 309	705, 361	379, 430	325, 931
1920	78, 744, 453	409, 785	859, 620	497, 452	362, 168
1921	78, 191, 875	309, 607	857, 892	400, 029	457, 863
1922	89, 017, 778	417, 743	898, 230	480, 895	417, 335
1923	108, 075. 919	456, 238	1, 095, 395	481, 029	614, 366
1924	116, 850, 373	477, 134	1, 142, 996	505, 689	637, 307
PORCE DIVISION					
1913	20, 703, 170	159, 956	115, 851	113, 580	2, 271
1914	36, 168, 163	751, 886	227, 721	209, 234	18, 487
1915	43, 535, 694	982, 979	267, 833	158, 121	109, 712
1916	59, 934, 849	1, 139, 886	334, 483	182, 131	152, 352
1917	58, 836, 374	1, 290, 741	312, 611	191, 022	121, 589
1918	65, 600, 932	1, 337, 941	361, 827	184, 563	177, 264
1919	90, 274, 020	1, 556, 253	519, 400	193, 193	326, 207
1920	101, 112, 950	1, 540, 254	644, 968	253, 645	391, 323
1921	91, 850, 004	1, 273, 157	633, 549	206, 337	427, 212
1922	98, 861, 054	1, 245, 200	608, 379	229, 209	379, 170
1923	118, 464, 312	1, 355, 039	732, 493	257, 009	475, 484
1924	132, 415, 043	1, 362, 312	760, 525	275, 052	485, 473
BOTH DIVISIONS, COMBINED					
1911			363, 932	287, 595	76, 337
1912			517, 696	265, 929	251, 767
1913			706, 129	456, 034	250, 095
1914			758, 404	530, 492	227, 911
1915			792, 174	389, 288	402, 886
1916			1, 052, 531	470, 038	582, 498
1917			895, 211	528, 752	366, 459
1918			843, 457	506, 339	337, 118
1919			1, 224, 761	572, 623	652, 138
1920			1, 504, 588	751, 097	753, 491
1921			1, 491, 441	606, 366	885, 075
1922			1, 506, 609	710, 104	796, 505
1923			1, 827, 888	738, 038	1, 089, 850
1924			1, 903, 521	780, 741	1, 122, 780

During the calendar year 1925 the gross receipts amounted to 2,276,533 pesos and the net profits to 1,279,432.

The indebtedness, as of December 31, 1925, was: Internal, 3,438,502 pesos; external, 3,403,661 pesos; total, 6,842,163 pesos.

RIGHT OF WAY

Altitude.—The road runs from 426 feet above sea level at Puerto Berrio to 4,834 feet at Medellin, which is the highest point on the road.

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The maximum grade on the Porce division is 2.5 per cent compensated, while on the Nus division it is 5 per cent uncompensated.

Curves.—The radius of the minimum curve on the Porce division is 71.85 meters, while on the Nus division it is 63.92 meters.

Ballast.—The road is ballasted with crushed stone.

Ties.—Hardwood (camino) ties, spaced 26 inches from center on stretches and 20 inches on curves, are used.

Rails.—Rails 30 feet in length, weighing 60 pounds per yard (American) and 50 pounds (European), are used on the road.

Water.—In the Porce division there are seven water stations with a capacity of 18,000 liters each, located at Medellin, Acevedo, Girardot, Barbosa, Botero, Santiago, and Popalito. In the Nus division there are 12 water stations located at Puerto Berrio (27,000 liters), Malema (7,600 liters), Cristalina (24,800 liters), Palestina (17,400 liters), Garacoli (24,800 liters), San Jose (18,000 liters), Sofia (18,000 liters), Cisneros (36,000 liters), and at Soledad, Monos, Camburo, and Torito.

Fuel.—The Nus division operates its locomotives with wood and the Porce division with coal obtained from the Cauca Valley. There is one coal station for the Porce division, at Medellin, which keeps an average supply of 1,000 tons, while in the Nus division wood is distributed in piles along the line.

Signaling equipment.—Hand flags, lanterns, and whistles are used for signaling.

Clearance.—Clearance on the road is limited to 13 feet in width and 15 feet in height.

Maintenance.—The roadbed and track are in excellent condition and able to withstand the traffic they are required to bear.

Bridges.—There are 10 main bridges having spans of 60 to 100 feet, as well as several smaller ones; also three viaducts, from 130 to 160 feet in length.

Tunnels.—There are no tunnels.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock of the road for the calendar year 1925 is as follows:

Nus division:		Porce division:	
Locomotives	13	Locomotives	7
Passenger cars	36	Passenger cars	38
Cattle cars	40	Cattle cars	33
Gondola and platform cars	36	Gondola and platform cars	29
Freight cars	62	Freight cars	52

Couplers 26 inches from rail to center of coupler are used. Passenger cars are equipped with M. C. B. automatic couplers; the freight cars have link-and-pin couplers.

REPAIR SHOPS

The railroad has two shops, one at Botero in the Porce division and the other at Cisneros, in the Nus division. Shops designed to be the finest in Colombia have been under construction at Bello, and in March, 1926, they were reported to be "nearly completed." Up to December 31, 1925, 432,328 pesos had been spent on these shops.

AMAGA RAILWAY

(FERROCARRIL DE AMAGA)

SURVEY OF DEVELOPMENT

This road dates its history from July 27, 1891, when a concession, valid for 50 years, was granted to the Ospina brothers by the government of Antioquia for the construction of a 60-centimeter-gauge railroad extending from Medellin to the Cauca River, a distance of 119 kilometers. Shortly afterwards this concession was canceled.

On October 14, 1906, Alejandro Angel submitted to the department of public works a contract which was approved on April 16, 1907, for the construction and operation of a road extending from Medellin to the Cauca River. By virtue of this contract the concessionaire agreed to form a company within three months and to construct, maintain, and operate the railway line for a period of 50 years. At the expiration of this time the company was to become the usufructuary of this work but with the right of selling it to the Government for half the price of its valuation within the next 25 years.

The company was exempt from payment of taxes, import duties, and all other similar exemptions which are granted in the construction of such enterprises. In addition, the Government agreed to subsidize the company with 300 hectares of land for each kilometer of line constructed and further add 9,990 pesos in gold per kilometer constructed on the level stretches between Medellin and Caldas and 15,000 pesos in gold per kilometer constructed in the mountain regions from Caldas onward.

The company was formed with a capitalization of 1,000,000 pesos, divided into shares of stock of 100 pesos each.

It was registered by the acts of August 12, 1907, and May 18, 1910, at which time it deposited 50,000 pesos in gold as a guaranty for the execution of the contract.

Construction of the road between Medellin and Amaga began on July 2, 1909, and on December 19, 1911, the road was opened to traffic as far as Caldas, a distance of 24 kilometers.

A section of 5 kilometers from Caldas was completed in December, 1912, but was not opened to traffic (because of bad weather) until August 19, 1913. On December 23, 1914, the road was constructed and opened to traffic as far as Amaga, a distance of 37 kilometers. In October, 1917, the section of 5 kilometers connecting the road with the village of Angelopolis, 42 kilometers from Medellin, was inaugurated. Since that time the road has been extended to Camilo Restrepo, a distance of 58 kilometers from Medellin. It is presumed that this will be the terminus of the road, as the line from Camilo Restrepo to the Cauca River is now being constructed by the Department of Antioquia and is known as the Cauca Railway. (A description of this road appears in this chapter.)

OPERATING OFFICIALS AND PURCHASES

The Department of Antioquia owns 9,912 shares, only 88 shares being held by private individuals, although the road is still operated as a private limited company.

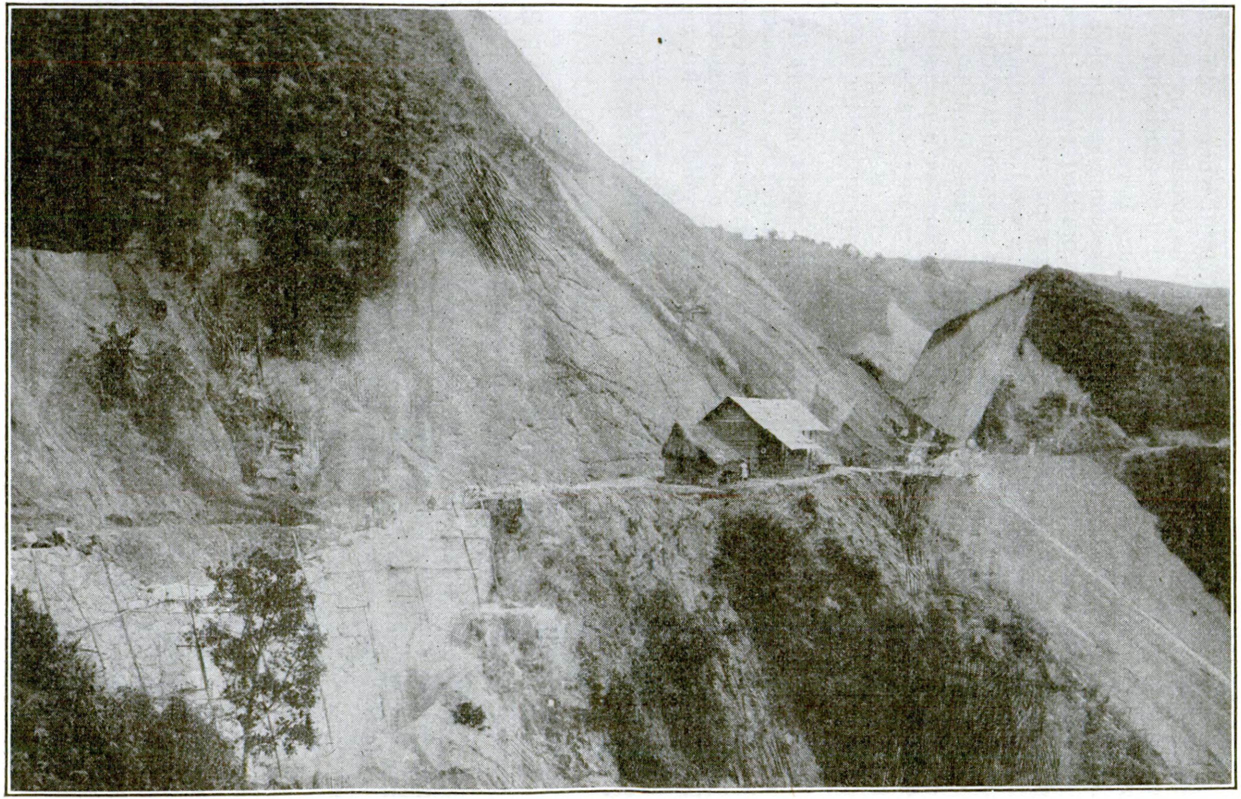

FIG. 5.—An embankment on the Amaga Railway, Colombia

Dr. Camilo C. Restrepo is manager, superintendent, chief engineer, principal private stockholder, and does all the purchasing. Juan de Dios Vasquez is assistant engineer, and Salvador Lopez is master mechanic.

Purchases for the road are made by Dr. Camilo C. Restrepo, who should be addressed in care of the road at Medellin. The road also has a purchasing agent in this country, Alejandro Angel & Cía., New York City.

FINANCES AND TRAFFIC

The following table shows the road's financial condition and the amount of traffic carried during the years indicated:

Years	Kilometers of track in operation	Number of passengers carried	Kilos of freight carried	Gross receipts	Cost of operation	Net revenue
				Pesos	*Pesos*	*Pesos*
1922	52	853, 108	59, 114, 546	291, 961		
1923	52	818, 284	69, 258, 699	338. 872	136, 748	202, 124
1924	52	760, 190	79, 732, 429	354, 269	148, 988	205, 281
1925	52			403, 491		

The following table shows the amount and types of traffic carried by the road during the calendar year 1924:

Classes		Number or amount	Pesos
Passengers:			
First class		122, 611	
Second class		149, 665	
Third class		487, 914	
Total		760, 190	
Total receipts			138, 855
Animals:			
Livestock—			
Large		22, 606	
Other		4, 631	
Poultry and other animals		1, 832	
Total		29, 069	
Total receipts			10, 434
Merchandise:			
First class	kilos	150, 682	
Second class	do	10, 594, 778	
Third class	do	25, 482, 415	
Fourth class	do	4, 547, 997	
Fifth class	do	38, 956, 557	
Total	do	79, 732, 429	
Total receipts			202, 373
Baggage:			
Total baggage	kilos	85, 775	
Excess baggage	do	27, 168	
Excess baggage receipts			378
Miscellaneous receipts			871
Grand total, receipts			352, 911

RIGHT OF WAY

Altitude.—The highest point on the road is at Caldas, which has an altitude of approximately 1,900 meters.

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The principal grades are as follows:

Medellin to Sabaneta, kilometer 13, 1.7 per cent.
Sabaneta to Caldas, kilometer 24, 2 per cent.
Caldas to Primavera, kilometer 27, 2.5 per cent.
Primavera to Amaga, kilometer 37, 3 per cent.
Amaga to Angelopolis, kilometer 42, 2.5 per cent.

Curves.—The line is constructed with a maximum curve of 80 meters radius and a 40-degree allowance.

Ballast.—The first 35 kilometers have fair gravel ballast, while the remainder is of a good quality of crushed stone.

Ties.—Hardwood ties are used.

Rails.—Rails in 30-foot sections, of 40 and 60 pounds, are used. The 60-pound rails are used on down grades.

Water.—Water stations are located as follows:

	Liters		Liters
Medellin	12,000	Angelopolis	7,000
Envigado	7,000	Piedecuesta	10,000
Ancon	40,000	Camilo C. Restrepo	12,000
Caldas	10,000		

Fuel.—Coal is used as fuel. The railway passes through extensive coal beds, which are found on the western watershed after passing "La Quiebra." In several places the railway cuts pass through three horizontal strata of coal. Fuel stations are located at Medellin, Caldas, Ancon, Angelopolis, Las Minas, Piedecuesta, and Camilo C. Restrepo, with capacities of 75, 10, 20, 10, 20, 10, and 10 tons, respectively.

Maintenance.—The roadbed is in excellent condition.

Bridges.—There are 50 small steel bridges. The largest, 24 meters in length, is over the Rio Medellin just before the town of Caldas is reached.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock for the calendar year 1925 was as follows:

Locomotives	9
Cars:	
Passenger cars—	
First class	9
Second class	8
Third class	12
Total	29
Freight cars—	
Box cars	38
Flat cars	30
Cattle cars	28
Total	96

There is one repair shop, located at Medellin.

CAUCA RAILWAY (UNDER CONSTRUCTION)

The construction of a railway connecting the town of Camilo C. Restrepo, the terminus of the Amaga Railway, with the Cauca River was commenced in 1925. The terminus on the Cauca River has not yet been determined, but it is presumed that Bolombole will be the important terminus, though it is not located quite on the river bank. Bolombole will also become the terminus of the Central de Bolivar

Railway and eventually connected with the Pacific Railway. This line, originally undertaken as an extension of the Amaga Railway, has been given a definite status as an independent road and is being constructed under the auspices of the Antioquia Railway Co. The line as projected has a continual grade of 3 per cent compensated and will extend a distance of approximately 39 kilometers. Construction work is difficult, because of the mountainous topography of that section. In the first 20 kilometers of construction there will be approximately six tunnels. The firm of Winston Bros., of Minneapolis, Minn., contracted for the construction of this railway on August 22, 1924. Work is to be carried on under the direction of a "junta," and all purchases are made by this organization. As of December 31, 1925, approximately 4 kilometers of track had been laid.

COLOMBIAN RAILWAYS & NAVIGATION CO. (LTD.)

(FERROCARRIL DE CARTAGENA)

SURVEY OF DEVELOPMENT

The history of this road dates from 1889, when a concession for its construction was granted to S. B. McConnico. The principal terms of this contract with the Department, dated November 18, 1889, and confirmed by the President January 4, 1890, are as follows:

The concessionnaire was to have exclusive privilege for 50 years for a line running from Cartagena to some unspecified point on the Magdalena, and during this period no other line might be constructed within a zone of 50 kilometers on either side. After expiration of this period of privilege, which, with certain limitations, included branch lines, the concessionnaire might exploit the line for 50 years more, unless the Government preferred to buy it on expert valuation. At the end of the whole period of 100 years, during the last 25 years of which 15 per cent of the net profits were to go to the Government, the latter was to receive the railway without payment.

The limit of time for the construction of the line was three years from the date of beginning work, and a stipulation of the usual kind was made as to the deposit of a bond. The concessionnaire also undertook to construct a wharf at Cartagena 200 yards long by 13 yards wide.

The question of subvention, after some discussion, was settled by Law 11 of November 9, 1892, which ordered that $8,000 gold should be paid per kilometer of track laid, with a limit of $760,000. Bonds redeemable by 5 per cent of the Atlantic customs receipts up to a maximum of $300,000 in any one year were to be used. There was also a grant of 100,000 hectares of public land, plus a premium in land for quick construction. As is often the case, it was not found worth while to take over more than a small portion of the land thus granted.

Mr. McConnico next acquired from its Colombian owners an already existing concession for the construction of a wharf and warehouse at La Machina (Cartagena) and entered into a similar but modified contract in his own name on August 21, 1891. He then proceeded to form two companies in Boston under the titles of the Cartagena Terminal & Improvement Co. (Ltd.), for the construction of the La Machina wharf, etc., and the Cartagena-Magdalena Railway Co., for construction of the main line to Calamar. Work was commenced in January, 1892. The La Machina wharf was opened on June 1, 1893. The line itself was opened from Cartagena to Turbaco (23 kilometers) June 15, 1893; Turbaco-Arjona (15 kilometers), February 2, 1894; Arjona-Calamar (67 kilometers), August 1, 1894.

The cost of the construction of the road is estimated as follows:

	U. S. currency
Special accounts	$899, 761
Attendant expenses	178, 130
Station and attendant expense	56, 242
Accounts to be distributed	74, 665
Material	86, 013
Equipment	102, 955
Total	1, 397, 766

On March 24, 1906, the Cartagena Railway Co. (Ltd.) was registered to take over and work concessions granted by the Government of Colombia for the construction of a railway, 105 kilometers in length, from Cartagena to Calamar, on the Magdalena River. The concessions were for a period of 100 years from 1894, with the right reserved to the Government to purchase the railway at a valuation at the expiration of 50 years to 75 years from 1894, and, if the line is not so purchased, to receive 15 per cent of the new profits during the last 25 years of the concession. If not previously acquired, the railway reverts to the Government at the end of the concession without payment. The company also acquired the pier, docks, wharf, and terminal facilities of the port of Cartagena, constructed under a concession granted by the Colombian Government, and conferring the right to work the same during a period of 99 years from 1891, with stipulations similar to those of the railway concession as to acquisition by the Government. Moreover, the company received 5,000 acres of freehold land on the railway and the right to select and take as freehold 250,000 acres of any unappropriated land in the Republic. The Colombian Navigation Co. (Ltd.) was registered June 10, 1909, and acquired the undertakings of companies carrying on a steamboat business on the River Magdalena, Colombia, together with wharfage at Barranquilla, Calamar, Bodegas de Bogota, and Carocoli. The whole of the capital, except seven shares, of the Colombia Navigation Co. was allotted to the Cartagena (Colombia) Railway Co. In 1912, the railway company's revenue having suffered severely from the drought in Colombia, in consequence of which the navigation of the River Magdalena was almost suspended, default took place in payment of interest, and as the result of prolonged negotiations a scheme was brought forward in June, 1913, under which the Cartagena (Colombia) Railway Co. and the Colombia Navigation Co. were amalgamated, although, because of litigation, the scheme did not go through until late in the year. The amalgamation was effected by the transfer to the railway company of the navigation company's properties. The company was to be known as the Colombian Railways & Navigation Co. (Ltd.).

In September, 1922, the approval of the bond and share holders and the sanction of the Colombian Government having been obtained, the company sold to the Andian National Corporation (Ltd.), of Toronto, the rights in the harbor of Cartagena, together with certain lands, for £50,000 in cash and La Machina pier and certain warehouses and other buildings for a price in cash based on a valuation. No part of the steamer service or of the railways was included in the sale, by the terms of which the purchasers are to extend La Machina pier or build a new and more extensive wharf to take its place, and right of access is to be reserved for the company's railways to the existing pier or any other wharf that may be constructed in Cartagena Harbor. The company is strenuously objecting to the construction of the Barranquilla-Cartagena Railway and the Central de Bolivar Railway. It bases its objections on the terms of its original concession. The Minister of Public Works has stated that these objections are baseless and that construction of the above-mentioned projects will continue.

As of December 31, 1925, the company is operating 105 kilometers of main track extending from Cartagena to Calamar and 3.5 kilometers of yards and sidings.

FINANCES AND TRAFFIC

According to the Stock Exchange Yearbook for 1925, the plan of reorganization dated March 23. 1923, and the present capitalization of the road are as follows:

Plan of reorganization dated March 23, 1923: Default took place in debenture interest in 1912, and deferred-interest warrants were authorized by scheme of 1913, which also provided for absorption of Colombia Navigation Co. (Ltd.). On July 17, 1923, court sanctioned plan of reorganization dated March 23, 1923, providing as follows: Capitalization prior to reorganization having been £750,000 fully paid shares of £1, £750,000 railway first-mortgage 5 per cent debentures (in respect of which there were at March 31, 1923, noninterest-bearing deferred interest warrants for £408,750), £426,600 navigation first-mortgage 6 per cent debentures, and £250,000 prior-lien 6 per cent bonds not issued except as collateral security and unaffected by plan:

(*a*) Share capital to be reduced to £37,500 by canceling 19s. per share (resulting 1s. shares to be consolidated in £1 shares) and then increased to £550,000 by creating 512,500 new £1 shares.

(*b*) Of the new shares, 501,195 to be issued as follows: To holders of navigation debentures, 20 shares per £100 debenture; to holders of railway debentures, 50 shares in exchange for each £100 debenture; and to holders of deferred-interest warrants, one share in exchange for each £10 of warrants.

(*c*) Further 6 per cent mortgage debentures for £150,000 to be created and issued to holders of Railway 5 per cent debentures at the rate of £20 of former (ranking for interest as from January 1, 1924) for each £100 of latter.

(*d*) Interest due on navigation debentures on January 1, 1923, to be paid in cash upon scheme becoming effective, and that due July 1, 1923, on due date (this was duly paid).

(*e*) All railway debentures with coupons and deferred-interest warrants to be surrendered and canceled, and charges in the trust deeds to be released.

(*f*) Existing £426,000 of navigation debentures to be hereafter called "mortgage debentures," ranking pari passu with mortgage debentures referred to in (*c*) above (with rights shown below); provisions in navigation trust deeds relating to renewal funds, order of appropriation of profits, etc., to be canceled.

Capitalization now consists of:

Five hundred and thirty-eight thousand six hundred and ninety-five pounds in shares of £1, fully paid. Authorized, £550,000. Price in official list, 6d.

Six per cent prior-lien bonds. Authorized, £250,000; £125,000 deposited with bankers as collateral security for loan when required. None issued.

Five hundred and seventy-six thousand six hundred pound 6 per cent mortgage debentures of £20 and £100 (bearer). Authorized, £576,600. Interest, January 1 and July 1. Maturity, January 1, 1951; redeemable at par at any time at six months' notice from company; sinking fund provided of 25 per cent of annual net profits (after interest charges and reserve provision) beginning with the year ending June 30, 1924, applicable to purchase at or below par, tenders below par, or drawings at par. Holders appoint three directors. Trustees, J. Davenport and W. Sandford Poole. Interest due July 1, 1924, was paid January 1, 1925. Price in official list, 46.

The following is a table showing the receipts, expenses, and traffic of the road for the years indicated:

Years	Freight carried	Passengers	Receipts	Expenses	Net income
	Metric tons		*Pesos*	*Pesos*	*Pesos*
1905	34, 670	----------	----------	----------	----------
1906	34, 623	----------	----------	----------	----------
1907	36, 548	----------	----------	----------	----------
1911	108, 600	----------	----------	----------	----------
1912	113, 500	----------	----------	----------	----------
1917	46, 901	51, 190	----------	----------	----------
1920	58, 682	21, 883	----------	----------	----------
1921	65, 764	36, 750	508, 903	394, 946	113, 957
1922	38, 379	28, 743	291, 454	287, 115	4, 339
1923	57, 486	27, 652	365, 955	292, 442	73, 513
1924	71, 213	90, 304	405, 113	330, 533	74, 580

OPERATING OFFICIALS AND PURCHASES

The operating officials are:

Managing director, Walter Miller, Finsbury Court, Finsbury Pavement, London.

Secretary and purchasing agent, F. Thomas, Finsbury Court, Finsbury Pavement, London.

General manager in Colombia, C. W. H. Taylor, Cartagena, Colombia.

Purchases for the road are recommended by the general manager, C. W. H. Taylor, Cartagena, Colombia, and made through the purchasing agent, F. Thomas, Finsbury Court, Finsbury Pavement, London, E. C.

RIGHT OF WAY

Altitude.—The road runs from 0.85 meter above sea level at Cartagena to 197.15 meters, the highest point on the road.

Gauge.—The gauge of the road is 0.914 meter.

Grades.—There are 39 grades, the maximum being 2½ per cent, except one severe grade of 11 kilometers surmounting a hill between Cartagena and Turbaco, which is 4½ per cent. The locomotives of the company have difficulty in making the grade even with a small load.

Curves.—The maximum curve has a radius of 97 meters and is located at kilometer 20.

Ballast.—Rock or dirt fill, from the side of the track, is used for ballast.

Ties.—Native hardwood ties, 6 by 8 inches by 7 feet, which need replacing after about eight years' service, are used. Ties are spaced 22 inches on centers.

Rails.—Rails in 30-foot sections, weighing 45 pounds to the yard, are used.

Water.—There are water tanks along the route at kilometers 15, 25, 26, 69, and 105.

Fuel.—Before the war coal was used as fuel; it was imported and a small bunkerage was carried at the wharf for steamers. During the war a sufficient supply of coal could not be obtained, and native hardwood cut near the line was mixed with coal as fuel. Good light volatile bituminous coal exists in large quantities to the south of the San Jorge River near the Antioquia boundary line, but this coal has never been mined to date. Fuel stations are located along the line at kilometers 26, 38, 63, and 105.

Signaling equipment.—Colored flags, lanterns, and whistles are used for signaling.

Clearance and loading.—Clearance on the road is lim
by 10 feet in height. Loading capacity is gauged by
9 feet; height, 9 feet; length, 40 feet; weight, 20 tons.

Maintenance.—The line is in poor condition.

Bridges.—There are 125 bridges, 24 being more than 20 mete
total length of the bridge work is 1,876 meters in 519 spans. Nea
wooden-pile bridges, consisting of bents 12 by 12 feet, 6 inches apart, w
made up of three or four piles and, where more than 18 feet high, are
braced vertically.

Tunnels.—There are no tunnels on the road. There are some heavy rock an
dirt cuts near Turbaco.

Stations and warehouses.—Stations on the line are located at Turbaco, Arjona, San Estanislao, Soplaviento, and Calamar. A warehouse is located at Calamar; its loading equipment consists of cranes to carry 15 tons at 20-foot boom radius.

MOTIVE POWER AND ROLLING STOCK

The following is a comparison of the motive power and rolling stock for the calendar years 1915 and 1925:

LOCOMOTIVES, 1925[1]

Number	Size of cylinders		Weight in running order	Weight of tender	Wheel arrangement		
					Engine		Tender
	Diameter	Stroke			Driving	Truck	
	Inches	*Inches*	*Pounds*	*Pounds*			
1	12	16	37,000		6 36″	2 24″	8 24″
1	16	20	69,530	50,000	8 38″	2 24″	8 24″
1	12	16	37,000		6 36″	2 24″	8 24″
1	15	24	80,000	45,000	6 48″	2 26″	8 24″
1	15	24	78,000	52,000	6 46″	2 26″	8 24″
1	15	24	78,000	52,000	6 46″	2 26″	8 24″
1	12	18	51,000	38,000	6 36″	2 24″	8 24″
1	14	20	(2)	(2)	6 37″	4 24″	8 24″
1	14	20	(2)	(2)	6 37″	4 24″	8 24″

[1] In 1915 there had been a total of 10 locomotives.

[2] Total, engine and tender, 80,000 pounds.

ROLLING STOCK

Cars	1915	1925
Passenger cars:		
First class	3	3
Second class	6	3
Combination	1	3
Baggage cars	3	3
Special company coach	1	1
Caboose		1
Tank cars (for water)		3
Freight cars	40	
Box type (15 tons)		65
Flat cars (15 tons)		24
Cattle cars (10 head)		19
Coal cars (15 tons)		9
Repair car		1
Motor car		1
Total	54	136

NOTE.—Cars are standard M. C. B. steel underframe, wooden structure. Cars have eight wheels, four to the track. Rolling stock is in poor condition and on several occasions has been insufficient to carry freight from the pier to the warehouse.

Drawheads of cast iron are being used.

The couplers are of the link-and-pin type. Between engines and tenders chafing plates and drawbars are used.

Locomotives are equipped with American steam brakes, equalized type, with shoes to all drives. Switch engines have steam brakes on four divisions only. Cars and coaches have band brakes on both four and eight wheels.

REPAIR SHOPS

The shops belonging to the company are at El Espinal, kilometer 2. The equipment includes a small foundry, machine shop, turntable, large water tanks of both cement and wood material, all sufficient for the repair service of the road.

BARRANQUILLA RAILWAY & PIER CO. (LTD.)

(FERROCARRIL DE BARRANQUILLA)

SURVEY OF DEVELOPMENT

Barranquilla lies on the left bank of the Magdalena River, about 6 miles from its mouth. It is fitted by its geographical position to be the great commercial port of Colombia, but the advantages of position are somewhat discounted by the bar at the mouth of the river and a line of dangerous shoals and sand banks extending along the coast for several miles westward. The port at the mouth of this river is Puerto Colombia, and it is as the connecting line between these two places that this railway operates.

The construction work on the railway was begun in 1867, and between that time and 1888 the railway line and the concessions relating to it changed hands many times. In 1888 the railway was taken over by the British company which is still operating it. The company has entered into the following contracts:

1. December 13, 1892, by which the company, in consideration of the fact that the contract price for the construction of the line had been largely exceeded, was permitted to base its tariff rates on British gold at one-half the original tariff rate, for Colombian money had depreciated 50 per cent between 1884 and 1892. It was also stipulated that the Government was to receive 40 per cent on a tax of 5 cents for each car of import or export passing over the pier.

2. March 7, 1898, by which the Government granted exemption from import duties on materials for construction, etc., and agreed to return certain duties already paid. The company on its side agreed to replace the old rolling stock, track, and bridges by new ones within 10 years.

3. March 18, 1905, with the government of the Department of Bolivar, by which the monthly payment owed by the company to the State, according to the contract of February 8, 1868, was altered from 500 Colombian pesos to $200 (United States).

4. April 29, 1896, by which the central Government agreed to pay $143,719 in full settlement of various pending accounts.

5. April 25, 1898, between Cisneros and the Government, for the construction of a railway with 1.77-meter gauge from any point on the Barranquilla line to join the Cartagena Railway at San Estanislao. This contract, which gave the concessionnaire an exclusive privilege for 50 years, but led to nothing, has long since expired.

In 1907 a serious question arose between the company and the Colombian Government. The original sale to Señor Uribe, 1884, was to have been "in perpetuity," but Congress, in ratifying the contract, inserted a provision that the Government was to have the right of purchase after 20 years from the completion and opening of the line to Puerto Belillo. This right the Government now claimed to exercise, maintaining that the period of 20 years dated from June, 1887. The company argued that, as the extension to Puerto Belillo had never been opened to traffic, the 20 years ought to run from the opening of the new pier at Puerto Colombia—that is, from June 14, 1893. The case was eventually settled in favor of the company. In 1913 the Government had not exercised its right of repurchase at valuation. It may do so in 1933, minus 40 per cent; later this right entirely lapses.

The operation of the pier and of the railway has always been profitable, notwithstanding the competition of the Cartagena Railway.

No extensions of the line are contemplated. The only lands developed to any extent lie along the Magdalena River above Barranquilla; the country toward Santa Marta to the east is a great swamp, and to the west as far as Cartagena it is dry and arid and of little use for agriculture or grazing. The local population is also very sparse. This railway is simply the connecting link between the seaport of Puerto Colombia and the river port of Barranquilla, and as such forms a very important link in the Magdalena River route. At Puerto Colombia a 4,300-foot pier affords ocean-going vessels ample means of docking.

The railway is capable of handling 50,000 packages of ordinary freight in two days of 24 hours each. This figure includes freight for both export and import cargoes. The line can handle 15,000 packages of export freight from Barranquilla to the pier at Puerto Colombia and load them on steamers in one day of 24 hours. The average loading rate is 800 sacks of coffee per hour from cars on pier to hold of vessel alongside. Coffee is the principal export and is taken as a basis of comparison when figuring all other classes of goods handled.

The pier is of steel screw-pile construction, said to be the longest in the world of this type. There is 5½ fathoms of water at the end of the pier; anchorage depth, 5½ to 8 fathoms; tide, 18 inches maximum fall. The length of the pier is 1 mile. The steel piling is protected by cement covering at the water line. At the sea end there are four railway tracks for placing cars for handling cargo. The line to the shore is single track. Merchandise is not stored either on the pier or in warehouses on the shore, but moves in freight cars directly to Barranquilla, where the customhouse is located.

On January 1, 1926, the road had 28.75 kilometers of track in operation from the pier at Puerto Colombia to the river port of Barranquilla. There are no sidetracks or branches.

FINANCES AND TRAFFIC

The finances of the road, according to the Stock Exchange Yearbook for 1925, are as follows:

Three hundred thousand pound shares of 1 peso (subdivided from 10-peso shares in December, 1920), all issued credited fully paid—200,000 pesos to vendor and 50,000 pesos to shareholders each time in 1913 and 1920 by capitalization of undivided profits. Authorized, £300,000 (including £50,000 created December, 1920). Price in supplementary list, 13s. 4½d.

One hundred thousand pesos 6 per cent first-debenture stock, issued at par in November, 1889, through River Plate Trust, Loan & Agency Co. (Ltd.); 15,000 pesos now held by company. Authorized, 100,000 pesos. Interest January 1 and July 1. Redeemable at 110 at any time on six months' notice from company. Secured by trust deed as first floating charge on properties; trustee, River Plate Trust, Loan & Agency Co. (Ltd.).

Forty-one thousand eight hundred and fifty-five pounds 8 per cent second-mortgage debenture stock, outstanding balance of £50,000 offered in November, 1921, at 90 to existing share and debenture holders. Authorized, £100,000. Interest January 1 and July 1. Redeemable at par December 31, 1932; cumulative sinking fund of 2 per cent provided commencing on or before January 1, 1924, applicable to annual drawings at par or purchases at or below par. Secured, subject to first-debenture stock, as floating charge on whole undertaking; trustee, River Plate Trust, Loan & Agency Co. (Ltd.).

Accounts to June 30, submitted October. Dividends—1912–13, 5 per cent plus bonus of 25 per cent in shares; six years to 1918–19, 5; 1919–20, 20 per cent, in shares; three years to 1922–23, 5; 1923–24, 6. Reserve, £80,000; renewals account, £20,000; second-debenture stock sinking fund unapplied, £498; carried forward, £50,248.

Voting, one vote per share. Director's qualification, £500 shares or debenture stock. Transfer form, common (separate deed each security); fee, 2s. 6d.; debenture stock transferable in amounts and multiples of £1. Fee for registration of probate, power of attorney, etc., 2s. 6d.

The following is a statement showing the traffic carried and the revenue received during the years indicated:

Years	Number of passengers	Kilos of freight carried	Gross revenue	Cost of operation	Net revenue
			Pesos	*Pesos*	*Pesos*
1922	223,952	174,638,273	722,318	500,367	221,951
1923	216,427	189,771,827	774,407	451,383	323,024
1924	216,516	218,578,890	818,531	611,575	206,956

DIRECTORS AND OPERATING OFFICIALS

The directors and operating officials of the road as as follows:

Directors:
  James Anderson (chairman), 52 Moorgate Street, London, E. C.
  R. R. Chalmers, 9 Idol Lane, London, E. C.
  Charles Clarke, 4 St. Dunstan's Alley, London, E. C.
  A. Isaac, 14 Austin Friars, London, E. C.
Secretary, F. Belcher, 39 Coleman Street, London, E. C.
Consulting engineers, Kincaid, Waller, Manville & Dawson, St. Stephens House, Westminster, S. W., London.
Manager, F. N. Riley, Barranquilla.
Chief accountant, Max J. Drew, Barranquilla.
Purchasing agent in the United States, H. S. Henry & Son, 116 Broad Street, New York City.
Codes used: Western Union, A. B. C., fifth edition.

PURCHASES

Purchases are made through the main office of the road at 39 Coleman Street, London, E. C., on requisition from the manager in Barranquilla. Minor purchases are made at Barranquilla, while, as above indicated, the company also has a purchasing agent in this country, H. S. Henry & Son, 116 Broad Street, New York City.

RIGHT OF WAY

Altitude.—The highest point on the road is 34 feet, practically the entire line being at this level.

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade is 1.33 per cent.

Curves.—The radius of the sharpest curve is 109 meters.

Ballast.—Crushed stone is used as ballast.

Ties.—Native ties of guayacan, trebel, coralibe, and balsamo, 5 by 9 inches by 7 feet 2 inches, spaced 12 ties to every 10 yards, are used on the road.

Rails.—The original rails were 35 pounds to the yard, but most of them have been replaced by rails weighing 60 pounds to the yard and 30 feet in length.

Water.—Water stations are located at Barranquilla (capacity 300,000 liters), La Playa (10,000 liters), Salgar (10,000 liters), and Puerto Colombia (300,000 liters).

Fuel.—Coal was used in locomotives until the war, when a sufficient amount could no longer be obtained and wood was substituted. No change in fuel is contemplated at the present time. An attempt has been made to bring coal from the deposits above Girardot, but the river freight rates were found to be too high. Good light coal exists in great abundance on the San Jorge River in southern Bolivar, and an effort is being made to clean out the river and float barges of the coal down to Barranquilla for the use of the railway and even for coaling vessels at Puerto Colombia. Fuel stations are located at Barranquilla (capacity 2,000 tons) and Puerto Colombia (capacity 2,000 tons).

Signaling equipment.—Flags and lanterns are used for signaling.

Maintenance.—The roadbed and track are in poor condition, but are capable of accommodating the traffic they are required to carry.

Clearance.—Clearance is limited to 11 feet 4 inches in width, with no limit on height.

Bridges.—There are three small steel bridges and a number of small wooden trestles.

Tunnels.—There are no tunnels on the road. Near Puerto Colombia there are several small rock cuts, the widest of which is 11 feet 4 inches.

MOTIVE POWER AND ROLLING STOCK

The following table shows the locomotives owned by the railway during the fiscal year ended June 30, 1925:

Number	Type	Weight, in running order	Weight of tender	Cylinder diameter and stroke
		Tons	*Tons*	*Inches*
1	oOOO	26	17	9½ by 16
1	oOOO	26	17½	14½ by 20
1	OO	17¼	8	11 by 16
1	OOO	25	--------	12 by 20
1	oOOOo	38½	--------	15 by 20
1	OOO	27½	--------	12 by 20
1	oOOO	26	17½	14½ by 20
1	OOo	15¼	--------	9 by 15
1	OOo	15¼	--------	9 by 15
1	OOo	15¼	--------	9 by 15
1	oOOOo	38½	--------	15 by 20
1	oOOOo	35	--------	15 by 20
1[1]	--------	--------	--------	--------
13				

[1] Emergency

The cars included 6 first-class day coaches, 6 second-class day coaches, 3 third-class day coaches, 168 covered cars, and 46 flat cars—a total of 229 cars. The cars are all of wood and in a very dilapidated condition. Locomotives show wear and need of repair and replacement.

There is no electric lighting of coaches on the road.

The following types of brakes are used: Locomotives, four fitted with steam brakes, remainder hand brakes; passenger coaches, independent hand brakes; freight cars, no brakes fitted.

Link-and-pin couplers are used exclusively.

The shops are at Barranquilla and are capable of handling all the needs of the line. Modern railroad machine equipment is lacking.

CUCUTA RAILWAY

(FERROCARRIL DE CUCUTA)

SURVEY OF DEVELOPMENT

The history of this railroad dates from 1876, when the Compañía del Camino a San Buenaventura secured a concession, valid for 80 years, from the Government for the construction of a railway running from Cucuta to San Buenaventura, following the course of a road which had previously been constructed. On July 25, 1968, the road reverts to the National Government free of encumbrance. The road was constructed from Cucuta to Puerto Villamizar in three sections of 18 kilometers each. The last section was finished and the road placed in operation in 1888. Since that time the road has been extended from Cucuta to Estacion Frontera opposite the Venezuelan town of San Antonio, a distance of 16 kilometers. This section is known as the Linea de La Frontera. When the line was first placed in operation the exporters of coffee from the Venezuelan districts of Rubro and San Antonio used the line extensively, but in recent years they have found it cheaper to send their coffee by mule back to the river ports.

On October 22, 1923, a law was passed authorizing the construction of a road from Cucuta to Pamplona, a distance of 78 kilometers. On October 25 of the same year the Colombian Congress appropriated 4,000,000 pesos of the American indemnity fund for the construction of this railroad and also for the construction of an aerial cable line which was to connect San Jose de Cucuta with the port of Gamarra, a distance of 170 kilometers, upon approval by the Government of the survey now under way. It is estimated that 1,000,000 pesos is to be spent on the railway and 3,000,000 pesos on the cableway. The capacity of the cableway is to be 20 tons hourly in both directions and the speed 2 meters per second. The capacity of the cars will be one-half ton. At the present time some material for the work has already been purchased, including 204 steel posts. Construction on the road to Pamplona was also to be subsidized by the Department of Santander del Norte at 4,000 pesos per kilometer. The work is being done by the Cucuta Railway under a Government contract. At the present time it has been constructed from Cucuta to Esmeralda, a distance of 21 kilometers. It is understood that none of the subventioned money has yet been paid.

In 1924 the Ferrocarril de Cucuta and the Ferrocarril del Tachira agreed to join their lines, and thus be enabled to transport their freight and passengers from Cucuta to the river port of Encontrados on the Catatumbo River. This project had the approval of both the Venezuelan and Colombian Governments. In compliance with the terms of the agreement (for a copy of this agreement, see p. 352, Venezuelan chapter) the Linea de Puerto Villamizar extended its line from its terminus at Villamizar to the town of La Grita, which is situated at the confluence of the Rivers Grita and Zulia. The Ferrocarril del Tachira also completed a branch line, which leaves the main line at Orope, or Kilometer 87, and ends at the town of La Grita, on the opposite bank of the river from the terminus of the Cucuta Railway. At the present time passengers cross this river, which is the boundary between Colombia and Venezuela, on a temporary wooden bridge, but freight must be dropped at the old river port of Villamizar. Material for a steel bridge, furnished by a German firm, has already arrived, and it is thought that the new bridge will be opened by April 1, 1926.

The annual traffic on this line amounts in round numbers to a total of 14,000 tons of goods imported from or destined to foreign countries, and a like tonnage of domestic goods for Colombian stations. The passenger traffic amounts to about 100,000 per year.

As of December 31, 1925, the road had 99.5 kilometers of track in operation, made up as follows:

	Kilometers
Main line, Cucuta to Puerto Villamizar	55
Branch lines:	
Puerto Villamizar to La Grita	7½
Cucuta to Frontera	16
Cucuta to Esmeralda	21
Total	99½

In addition, the company leases and operates the municipal street railway line of Cucuta.

FINANCES AND TRAFFIC

The road is capitalized for 1,800,000 pesos in 18,000 shares, with a par value of 100 pesos each. Six thousand of these shares are owned by the municipality of Cucuta and 850 by the River Plate Trust Loan & Agency Co. (Ltd.), 52 Moorgate Street, London. The remaining shares are owned by the company, all members of which are Colombians.

The balance sheet of the road for the fiscal year ended June 30, 1925, is as follows:

Accounts	Debits	Credits
	Pesos	*Pesos*
Bonds in treasury		1,800,000
Railroad and branches	1,666,647	
Reserve fund		233,795
Francisco de P. Vargas	2,403	
Isaac & Samuel		4,940
Improvements		939
Dividends payable		746
Agency in Bogota	1,097	
Profit and loss	27,120	
Various creditors		97,000
Roofing		213
F. Herman Pfingsthorn	7,000	
Premiums		452
Riboli, Abbo & Co., Maracaibo	831	
Tramway		493
Van Dissel, Rode & Co., Maracaibo		5,432
Provident fund		448
Workshops	2,761	
Treasury	320,042 26,755 47,940	
Articles in bond	104,986	
General expenses	15,880	
Interest	7,396	
Freight receipts		86,262 2,873
Insurance of employees	2,735	
Total	2,233,503	2,233,593

Traffic statistics are presented below:

MAIN LINE

Items	Kilos	Receipts	Ton-kilometers	Receipts per ton-kilometer	Average distance transported	Per cent of kilos	Per cent of total receipts	Number of pieces	Average charge per piece
Freight:		*Pesos*		*Peso*	*Kilometers*				*Pesos*
First class [1]	7, 599, 755	114, 402	417, 987	0. 2737	55. 000	47. 02	73. 52	1, 184	6. 419
Second, third, fourth, and fifth classes	6, 059, 060	21, 597	230, 090	. 0938	37. 974	37. 49	13. 88	753	8. 046
Sixth class	1, 749, 685	2, 226	59, 759	. 0372	34. 154	10. 83	1. 43	351	4. 985
Seventh class	753, 220	1, 971	26, 621	. 0741	35. 343	4. 66	1. 27	178	4. 232
Total or average	16, 161, 720	140, 196	734, 457	. 1909	45. 444	100. 00	90. 10	2, 466	6. 554

Items	Number	Receipts	Passenger-kilometers	Receipts per passenger-kilometer	Average distance transported	Per cent of passengers	Per cent of receipts	Number of passages
		Pesos		*Peso*	*Kilometers*			
Passengers	53, 815	12, 714	1, 210, 568	0. 0105	22. 495	83. 50	8. 17	1, 681
Animals	4, 931	1, 628	115, 977	. 0141	23. 520	7. 66	1. 05	1, 311
Birds	5, 693	121	190, 748	. 0006	33. 505	8. 84	. 08	-----
Total or average	64, 439	14, 463	1, 517, 293	. 0095	23, 546	100. 00	9. 30	2, 992
Telephone	4, 697	568	----------	-------	--------	-------	. 37	-----
Express	14	341	----------	-------	--------	-------	. 16	14
Sick and corpses	21	110	----------	-------	--------	-------	. 07	21
Grand total	----------	155, 578	----------	-------	--------	-------	100. 00	5, 493

[1] See explanation below.

FRONTERA BRANCH

Items	Kilos	Receipts	Ton-kilometers	Receipts per ton-kilometer	Average distance transported	Per cent of kilos	Per cent of total receipts	Number of pieces	Average charge per piece
Freight:		*Pesos*		*Peso*	*Kilometers*				*Pesos*
Second, third, fourth, and fifth classes	637, 805	1, 598	7, 394	0. 2161	11. 592	27. 42	13. 59	585	1. 090
Sixth class	[1] 1,688, 520	738	10, 982	. 0672	6. 504	72. 58	6. 28	432	3. 908
Total or average	2, 326, 325	2, 336	18, 376	. 1271	7. 899	100. 00	19. 87	1, 017	2. 287

Items	Number	Receipts	Passenger-kilometers	Receipts per passenger-kilometer	Average distance transported	Per cent of passengers	Per cent of receipts	Number of passages
		Pesos		*Peso*	*Kilometers*			
Passengers	58, 896	9, 337	349, 076	0. 02675	5. 927	99. 12	79. 42	1, 840
Animals	254	54	1, 928	. 0278	7. 590	. 43	. 46	348
Birds	268	7	2, 912	. 0023	10. 872	. 45	. 06	-----
Total or average	59, 418	9, 398	353, 916	. 0265	5. 956	100. 00	79. 94	2, 188
Telephone	64	9	----------	-------	--------	-------	. 08	-----
Express	1	12	----------	-------	--------	-------	. 10	1
Sick and corpses	1	1	----------	-------	--------	-------	. 01	1
Grand total	----------	11, 756	----------	-------	--------	-------	100. 00	3, 207

[1] Includes 36,000 kilos which the municipality rates at 50 per cent of the scheduled rate.

CUCUTA TO ESMERALDA

Items	Kilos	Receipts	Ton-kilometers	Receipts per ton-kilometer	Average distance transported	Per cent of kilos	Per cent of total receipts	Number of pieces	Average charge per piece
Freight:		*Pesos*		*Peso*	*Kilometers*				*Pesos*
Second, third, fourth, and fifth classes	3, 158, 075	9, 855	66, 161	0. 1489	20. 949	90. 62	44. 43	918	3. 440
Sixth class	326, 470	513	4, 345	. 1181	13. 308	9. 38	2. 31	97	3. 366
Total or average	3, 484, 545	10, 368	70, 506	. 1471	20. 234	100. 00	46. 74	1, 015	3. 433

	Number	Receipts	Passenger-kilometers	Receipts per passenger-kilometer	Average distance transported	Per cent of passengers	Per cent of receipts	Number of passages
		Pesos		*Peso*	*Kilometers*			
Passengers	41, 794	10, 787	477, 287	0. 0226	11. 420	95. 63	48. 63	1, 114
Animals	1, 418	740	28, 036	. 0264	19. 771	3. 25	3. 34	726
Birds	487	12	9, 532	. 0012	19. 573	1. 12	. 05	
Total or average	43, 699	11, 539	514, 855	. 0224	11. 782	100. 00	52. 02	1, 840
Telephone	101	15					. 09	
Express	19	255					1. 14	19
Sick and corpses	2	4					. 01	2
Grand total		22, 181					100. 00	2, 876

NOTE.—Tramway receipts were 13,107 pesos.

TOTAL OF THE LINES

Items	Kilos	Receipts	Per cent of receipts
Freight:		*Pesos*	
First class	[1] 7, 599, 755	114, 402	56. 46
Second, third, fourth, and fifth classes	9, 854, 940	33, 050	16. 31
Sixth class	3, 764, 675	3, 477	1. 72
Seventh class	753, 220	1, 971	. 97
Total or average	21, 972, 590	152, 900	75. 46

	Number	Receipts	Per cent of receipts
		Pesos	
Passengers	154, 505	32, 838	16. 20
Animals	6, 603	2, 422	1. 20
Birds	6, 448	139	. 07
Total or average	167, 556	35, 399	17. 47
Telephone	4, 862	592	. 29
Express	34	509	. 25
Sick and corpses	24	115	. 06
Tramway		13, 107	6. 47
Grand total		202, 622	100. 00

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[1] Includes 150,460 kilos of "company goods" on which no freight was paid, as well as 14,015 kilos which the Government rates at 50 per cent of the scheduled rate.

The articles included in the various "classes" mentioned in the above table are indicated below:

Class 1.—All articles imported or exported belong to this class.

Classes 2, 3, 4, and 5.—The following articles belong to these classes: Tobacco, cacao, inflammable, explosive, and corrosive materials, hemp bags, sugar, flour, liquor (wine, brandy, and whisky), cars, furniture, salt, rice, maize, peas, beans, coffee, potatoes, cheese, beer, oils, greases, fish, provisions, merchandise (not included in other classes), drugs, medicines, soap, iron of all kinds, machinery, nonprecious metals, hides, horn, tagua nuts, tanned hides, yucca, plantain, sugar-cane, milk, fodder, meat, ground coffee, vermicelli, biscuits, bread, volatile oils, jugs, dyes for tanning hides, bran, nonprecious minerals, clay, bottles, flasks, barrels and empty containers, if not used for exports or imports.

Class 6.—Wood.

Class 7.—Wood in form of shelves, posts, beams, poles, logs; bamboo, palms, stones, tiles, brick, lime, etc., and barbed wire if not imported.

On the Frontera branch the articles of the last two classes are contained in one and called sixth class.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road as of November 24, 1925, are as follows:

President, Fabio Gonzales Tavera.
First vice president, Manuel Guillermo Cabrera.
Second vice president, Edward Gumpel.
Directors, Francisco Penaranda and the municipality of Cucuta; attorney (Julio Cesar Garcia Herreros).
Secretary, Jorge E. Barco.
Treasurer, Gustavo Cabrera.
Engineer, Emilio Gaitan Martin.
Inspector, Leandro Cuberos Nino.
Chief of repair shops, Jose de J. Porras.
Agents:
  Luis Soto & Co., Apartado 106, Bogota.
  Van Disell, Rode & Co., Sucs, Maracaibo.
  Breuer, Moller & Co., Sucs, Maracaibo.
  Riboli, Abbo & Co., Maracaibo.
  Francisco de Vargas, 80 South Street, New York City.
  Isaac & Samuel (Ltd.), 35 New Broad Street, London.

Purchases for the road are made through the above-mentioned agents for the company.

RIGHT OF WAY

Altitude.—On the section of the road between Puerto Villamizar and Cucuta the highest point is 357 meters at Cucuta, while Puerto Villamizar has the minimum altitude of 106 meters. On the Cucuta-Frontera line, Frontera, the highest point, has an altitude of 472 meters, while on the line from Cucuta to Pamplona, which is under construction, the highest point is La Donjuana, with an elevation of 753 meters.

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade on all sections is 2.5 per cent.

Curves.—The radius of the minimum curve on the road is 50 meters, located on the Cucuta-to-Pamplona line, while the radius of the maximum curve is 100 meters on the Cucuta-to-Villamizar line.

Water.—Water is secured locally. Water stations on the line to Puerto Villamizar are located at Aguablanca (tank), Aguaclara (section pump), and Puerto Villamizar (section pump).

Ties.—Ties 1.80 by 0.20 by 0.11 meters, of native carraguate wood and spaced on 0.60-meter centers, are used.

Rails.—Rails weighing 30 and 40 pounds to the yard are used.

Fuel.—Wood and peat obtained locally are used as fuel.

Maintenance.—The road is in good condition.

Signaling equipment.—No automatic signaling equipment is in use.
Bridges.—There are 27 small bridges on the road.
Tunnels.—There are no tunnels on the line.

MOTIVE POWER AND ROLLING STOCK

The following is a table of the motive power and rolling stock for the Cucuta Railroad as of December 31, 1925:

Locomotives (318 tons)	13
Passenger cars:	
First class (124 passengers)	3
Second class (234 passengers)	5
Mixed (169 passengers)	4
For invalids (8 passengers)	1
For inspection (6 passengers)	1
Total (551 passengers)	14
Freight cars:	
Iron cars (162,000 kilos)	18
Wooden cars (144,000 kilos)	16
Grating for cattle (63,000 kilos)	7
Flat cars (336,000 kilos)	30
For ballast (60,000 kilos)	20
Refrigerator (9,000 kilos)	1
Total (774,000 kilos)	92

REPAIR SHOPS

The repair shops are located at Cucuta and are in good condition. The shops comprise a machine shop, blacksmith shop, tin shop, carpenter shop, foundry, etc.

DORADA EXTENSION RAILWAY (LTD.)

(FERROCARRIL DE LA DORADA)

SURVEY OF DEVELOPMENT

The Dorada Railway Co. (Ltd.) was registered April 16, 1888, to acquire a concession from the Colombian Government for the construction of a railway 32 kilometers in length, extending from La Dorada to Honda.

On April 11, 1905, this company was reorganized and the Dorada Extension Railway (Ltd.) was incorporated to take over the old project and to acquire a new concession for the further extension of the road to Girardot. The road was opened to traffic to Ambalema, a distance of 111 kilometers, in September, 1907. Under the terms of the contract the Government has the option of purchasing the railway in 1961 at an appraised valuation, while if this option is not exercised within 25 years from 1961, the Government is to have the right of purchase during the next 24 years at one-half of the appraised valuation, and if the foregoing rights are not exercised at the expiration of the latter period the line reverts to the Government without payment. The concession to continue the construction of a railway from Ambalema to Girardot has been abandoned in favor of a line now under construction from Ambalema to a point on the Tolima Railway. Upon completion of this road and the bridge across the Magdalena River connecting Flandes with Girardot through service will be offered to Bogota. At the present time the company operates 111 kilometers of track, extending from La Dorada to Ambalema, and also operates and controls the Dorada Railway (Ropeway Extension) (Ltd.), whose aerial ropeway extends a distance of 72 kilometers from Mariquita to Manizales.

The Dorada Railway (Ropeway Extension) was organized December 7, 1912, to construct an aerial ropeway from Mariquita, 500 meters above sea level, on the La Dorada Railway, to any one of the districts of Manizales (2,140 meters above sea level), Pereira, or Neiva. The line was opened to traffic from Mariquita to Fresno, 16 kilometers, in April, 1915; to La Cedral, 33 kilometers, in November, 1915; to Cajones, 50 kilometers, in October, 1920. By November, 1921, 60 kilometers were constructed and in operation, while the whole ropeway was completed to Manizales, a distance of 72 kilometers, in February, 1922. The cableway is the largest in the world now in service, is supported by 376 steel posts, from 4 to 66 meters in height, and has 22 stations.

It is constructed so that it has 20 tons traffic capacity per hour in both directions from the terminal. At the present time it carries about 10 tons hourly from each terminal, working an 11-hour day. The operation of the line is simple; cars are attached to the cable, which in turn is attached to revolving cylinders, around which the cable is wound. Traction is supplied by 9 steam motors of 40 horsepower each. It takes approximately 10 to 12 hours to cover the entire distance. This cableway is the principal means of transportation between the center of the coffee-growing district and the railway.

At the present time the Government is contemplating the construction of an additional cableway extending from Manizales across the western Cordillera and through the gold and platinum region of Coco to some point on the Pacific. Law 98 of 1923 has provided $200,000 annually for the construction of this cableway.

FINANCES

The following statement in reference to the financial condition of the La Dorada Extension Railway (Ltd.) is taken from the Stock Exchange Year Book for 1925:

> The authorized share capital is £350,000, all issued and paid up, and the present borrowing powers of £600,000 have been fully exercised, the amount outstanding at December 24, 1924, being £428,081.
>
> Three hundred and fifty thousand pounds (shares of £10), fully paid, the total authorized, of which £219,310 was allotted credited fully paid to shareholders of the old company. Quoted in the official list; latest price, 6½.
>
> Three hundred and thirty-two thousand eight hundred and six pounds 6 per cent first-mortgage debenture stock, outstanding balance of a total authorized and issued of £350,000, with interest payable January 1 and July 1, and the principal repayable at par December 31, 1960, or at 110 at any time earlier at the option of the company on six months' notice or in the event of liquidation for amalgamation or reconstruction. From a voluntary sinking-fund stock has been purchased at less than 110 and canceled. The debenture stock is secured by trust deed as a specific charge (in accordance with Colombian law) on the entire railway and concessions; trustees, F. J. Gordon, G. R. T. Upton. Quoted in the official list; latest price, 90.
>
> Ninety-five thousand two hundred and seventy-five pounds 8 per cent second-mortgage debenture stock, outstanding balance of £250,000 issued at 95 in February, 1922. Authorized, £250,000. Interest payable January 1 and July 1; principal repayable July 1, 1937, at 105, or at the same price at any time

after July 1, 1927, at the option of the company on six months' notice. The stock is secured by trust deed (trustee, Union Commercial Investment Co. (Ltd.)), as a specific second mortgage on the property of the company subject to the first mortgage, and also as a charge on a first-mortgage debenture of £100,000 of the Dorada Railway (Ropeway Extension) (Ltd.) held by the company against advances amounting to £90,000 to the Ropeway company, all payments made in reduction of the Ropeway mortgage to be available for the redemption of the second-mortgage debenture stock. (The Ropeway mortgage falls due July 1, 1937—extended from 1923.) Quoted in the official list; latest price, 102½.

A comparison of the railway's finances during the years 1912 and 1924 is presented below. The balance sheet as of December 31, 1912, is shown first:

Dr.:

	£	s.	d.
Capital account balance as per account No. 3	10,485	4	6
Debenture stock redeemed account	9,500	0	0
Debenture interest accrued	9,619	2	6
Sundry credit balances	5,188	0	8
Reserve account	24,643	2	8
Sinking fund for redemption of debenture stock	2,036	15	0
Net revenue account, balance per account No. 5	35,395	14	7
Total	96,867	19	11

Cr.:

	£	s.	d.	£	s.	d.	£	s.	d.
Stocks and stores—									
Stores, etc., at cost				10,602	10	0			
Furniture at cost (less depreciation)				885	12	9			
							11,488	2	9
Cash—									
At bank, on deposit, and in hand	47,301	14	1						
In Colombia	5,227	11	5						
				52,529	5	6			
Bills receivable				2,250	10	11			
							54,779	16	5
Money on loan							15,500	0	0
Sundry debit balances							3,600	0	9
Debenture stock redeemed and canceled							9,500	0	0
Redemption of Honda municipal subvention							2,000	0	0
							96,867	19	11

Following is the balance sheet at December 31, 1924:

Dr.:

	£	s.	d.	£	s.	d.
Capital outstanding as per statement No. 1				778,081	0	0
6 per cent debenture stock redeemed out of sinking fund				17,194	0	0
				795,275	0	0
Balance brought down				97,667	2	10
Debenture interest accrued				10,691	5	3
Sundry credit balances				93,640	16	4
Bills payable				189	4	6
Reserve accounts—						
Including rolling stock renewal funds, general reserves, and depreciation of concession	144,528	10	6			
Reserve (Ropeway shares)	60,000	0	0			
				204,528	10	6
Debenture stock sinking fund				25,344	3	6
Ropeway branch, sundry credit balances				9,490	11	4
Net revenue account, balance per account No. 3				48,618	6	5
Total				490,170	0	8

Cr.:	£	s.	d.
Cost of railway and property	697,607	17	2
Balance carried down	97,667	2	10
	795,275	0	0

Stocks and stores—	£	s.	d.			
Stores, etc., at cost	27,008	9	2			
Furniture at cost (less depreciation)	1,357	10	0			
				28,365	19	2
Cash—						
At bank, on deposit, and in hand	96,273	16	11			
In Colombia	3,996	15	4			
				100,270	12	3
Bills receivable				10,500	0	0
Dorada Railway (Ropeway Extension) shares at cost				153,807	5	6
5 per cent treasury bonds, at cost				35,461	10	3
Ropeway Branch—						
Stores, etc., at cost	15,676	11	11			
Furniture, at cost (less depreciation)	935	8	0			
Cash and bills receivable	6,774	17	7			
Sundry debit balances	112	10	0			
				23,499	7	6
Dorada Railway (Ropeway Extension)—						
Advances against first-mortgage Ropeway debentures	90,000	0	0			
Advances against second-mortgage Ropeway debentures	17,500	0	0			
				107,500	0	0
(These advances are repayable at a premium.)						
Dorada Railway (Ropeway Extension)—						
On current account	8,836	1	6			
On premium on advances account	3,026	18	4			
				11,862	19	10
Sundry debit balances				18,902	6	2
Total				490,170	0	8

There is shown below the revenue account for the year ended December 31, 1912:

EXPENDITURES

				£	s.	d.
Maintenance of permanent way				10,331	19	10
Locomotive department				7,541	6	3
Telegraph and telephone expenses				417	0	1
Traffic expenses				9,176	0	5
				27,466	6	7
General charges (Colombia)				4,386	12	0
				31,852	18	7
General charges (London)—	£	s.	d.			
Directors', auditor's, and trustees' fees	1,652	10	0			
Office salaries	763	14	2			
Rent and office expenses	281	4	11			
Printing and stationery	52	18	5			
Law charges	51	18	6			
				2,802	6	0
				34,655	4	7
Balance to net revenue account				54,388	16	9
Total				89,044	1	4

EARNINGS

	£	s.	d.
Passengers	9,578	6	8
Luggage	670	6	1
Goods	75,247	16	0
Cattle	3,369	11	2
Warehouse dues	111	10	5
Miscellaneous	66	11	0
Total	89,044	1	4

Following is the revenue account for the year ended December 31, 1924:

EXPENDITURES

	£	s.	d.	£	s.	d.
Maintenance of permanent way, works, and stations, including provision for depreciation on wharves, etc				42,793	19	7
Locomotive department				44,749	15	8
Telegraph and telephone expenses				480	2	2
Traffic expenses				36,357	2	6
				124,380	19	11
General charges (Colombia)				12,826	15	4
				137,207	15	3
General charges (London):						
Directors', auditors', trustees' fees, and office salaries	4,182	13	8			
Rent and office expenses	973	6	2			
Printing and stationery	121	10	7			
Law charges	35	4	4			
				5,312	14	9
				142,520	10	0
Balance to net revenue account				113,329	4	11
Total				255,849	14	11

EARNINGS

	£	s.	d.
Passengers	26,780	11	9
Luggage	1,460	13	7
Goods	218,498	11	10
Cattle	3,426	10	3
Warehouse dues	856	3	11
Miscellaneous	4,827	3	7
Total	255,849	14	11

The net revenue account for the calendar year 1912 is shown below:

Dr.:	£	s.	d.
Debenture interest	20,430	0	0
Sinking fund	2,036	15	0
Bad debt written off	284	3	9
Redemption of Honda municipal subvention—Proportion written off	1,000	0	0
Balance down	35,395	14	7
Total	59,146	13	4

Cr.:		£	s.	d.	£	s.	d.
Balance from 1911		16,737	6	4			
Less—							
Dividend of 2½ per cent	£8,750						
Transfer to reserve account	5,000						
		13,750	0	0			
					2,987	6	4
Revenue account, balance transferred from account No. 4		54,388	16	9			
Add gain in exchange		636	17	4			
					55,025	14	1
Interest					1,105	7	11
Transfer fees					28	5	0
Total					59,146	13	4
Balance					35,395	14	7

Following is the net revenue account for the year ended December 31, 1924:

Dr.:	£	s.	d.
Debenture interest	30,561	4	8
Debenture stock sinking fund	10,799	10	6
Income tax and corporation profits tax	12,201	10	8
Income tax reserve account	10,000	0	0
New works	1,890	8	11
Reserve for general renewals	10,000	0	0
Reserve for depreciation of concession	20,000	0	0
Balance down	48,618	6	5
Total	144,071	1	2
Cr.:			
Balance from 1923	21,730	4	7
Less dividend of 5 per cent and bonus of 1 per cent	21,000	0	0
	730	4	7
Dorada Railway (Ropeway Extension), charge for management of Ropeway Branch, as per agreement	2,000	0	0
Revenue account, balance transferred from account No. 2	113,329	4	11
Interest	9,813	16	4
Transfer fees	14	2	6
Gain in exchange	18,183	12	10
Total	144,071	1	2
Balance	48,618	6	5

There is given below a statement of the freight traffic for the calendar years 1912 and 1924:

Classes of goods	1912	1924	Classes of goods	1912	1924
	Kilos	*Kilos*		*Kilos*	*Kilos*
Coffee	28,254,435	55,000,936	Soap	1,460,660	1,948,728
Hardware	2,419,087	2,472,165	Spirits	940,885	2,018,032
Hides	2,259,558	2,873,949	Sugar	1,077,923	4,277,615
Lard	590,841	1,055,773	General merchandise	18,743,336	36,037,642
Machinery	2,580,365	1,311,920			
Medicine	685,321	485,481	Total paying freight	72,593,329	150,504,617
Mineral	1,289,268	64,808	Company's materials	84,462	308,656
Petroleum	854,629	5,000,731			
Provisions	8,248,557	16,308,991		72,677,791	150,813,273
Railway and mines material	1,010,408	11,221,739	Total "up" traffic		69,998,283
Rubber	255,962	4,525	Total "down" traffic		80,814,990
Salt	1,922,094	10,421,582			

The financial statement of the La Dorada Railway (Ropeway Extension) (Ltd.) is taken from the Stock Exchange Yearbook for 1925:

The authorized capital is £250,000 in shares of £5, of which £230,000 has been issued and paid up, £150,000 being held by the Dorada Extension Railway (Ltd.). At December 31, 1923, there were advances from the controlling company (repayable at a premium) amounting to $155,000, $90,000 of which was covered by a first mortgage for $100,000 due July 1, 1937, and the remainder ($65,000, since reduced to $20,000) by second-mortgage debentures for $65,000, on the ropeway. A liability on current account to the controlling company has been extinguished.

Accounts to December 31, submitted July. No dividend yet. In 1923 gross revenue was $98,763 (compared with $64,759 in 1922), and working expenses $51,086 (compared with $40,331 in 1922); $3,500 was transferred to reserve from revenue, making that fund $14,000, and after meeting interest charges, etc., and writing off balance ($21,343) of cost of concession and loss on electric power plant, a credit balance of $674 brought down was increased to $1,687. Gross receipts January 1 to December 31, 1924, $97,615 (decrease, $1,585).

Following is the balance sheet of the Dorada Ropeway Extension at December 31, 1924:

				£	s.	d.
Dr.:						
Share capital—						
Authorized, 50,000 shares of £5 each	£250,000					
Issued, 46,000 shares, £5 each, fully paid				230,000	0	0
First-mortgage debentures	100,000					
Second-mortgage debentures	100,000					
Less amount canceled	80,000					
	20,000					
Sundry credit balances				21,199	16	11
Reserve account				14,000	0	0
Income-tax reserve account				9,000	0	0
Reserve for power-plant equipment				10,000	0	0
General depreciation reserve				5,000	0	0
Dorada Extension Railway (Ltd.)—	£	s.	d.			
On current account	8,836	1	6			
Premium on advances account	3,026	18	4			
				11,862	19	10
Dorada Extension Railway (Ltd.)—						
Advances against above first mortgage	90,000	0	0			
Advances against second-mortgage debentures	17,500	0	0			
				107,500	0	0
(These advances are repayable at a premium.)						
Net revenue account, balance				16,388	9	8
Total				424,951	6	5
Cr.:						
Cost of property, less depreciation written off				424,869	10	5
Cash				141	16	0
Total				424,951	6	5

The revenue account of the Ropeway for the year ended December 31, 1924, is presented below:

EXPENDITURES

	£	s.	d.
Maintenance of ropeway, trestles, and stations	23,797	10	3
Power-plant department	11,916	14	11
Traffic expenses	10,095	9	8
Telephone expenses	1,172	14	7
	46,982	9	5
General charges, Colombia	4,117	5	10
	51,099	15	3
General charges, London	2,481	19	6
	53,581	14	9
Balance to net revenue account	44,267	2	0
Total	97,848	16	9

RECEIPTS

	£	s.	d.
Goods	97,834	16	6
Sundry receipts	14	0	3
Total	97,848	16	9

The net revenue account for the calendar year 1924 was as follows:

	£	s.	d.
Dr.:			
Dorada Extension Railway, charge for management as per agreement	2,000	0	0
Income tax and corporation profits tax	3,394	19	10
Interest on advances	9,810	5	1
Premium on advances repaid	3,026	18	4
Income tax reserve	4,000	0	0
General depreciation reserve	5,000	0	0
Reserve for power plant equipment	10,000	0	0
Balance down	16,388	9	8
Total	53,620	12	11
Cr.:			
Balance from 1923	1,687	2	2
Revenue account, balance transferred	44,267	2	0
Gain in exchange	7,632	5	0
Interest on deposit	32	6	3
Transfer fees	1	17	6
Total	53,620	12	11
Balance	16,388	9	8

TRAFFIC

The following is a statement showing the traffic movement of both the railway and the cableway:

	Number of passengers carried	Kilos of freight carried	Gross revenue	Cost of operation	Net revenue
La Dorada Railway:			*Pesos*	*Pesos*	*Pesos*
1922	181,486	84,261,022	708,844	457,303	251,541
1923	201,790	121,806,000	1,043,510	474,505	569,005
1924	222,228	150,813,000	1,279,249	562,079	717,170
La Dorada Cableway:					
1922	----------	19,000,000	324,000	202,000	122,000
1923	----------	28,578,000	493,816	202,600	291,216
1924	----------	30,725,000	489,244	215,608	273,636

Following is a statement of the freight traffic over the Dorada Cableway for the calendar years 1923 and 1924:

Classes of commodities	1923	1924	Classes of commodities	1923	1924
	Kilos	*Kilos*		*Kilos*	*Kilos*
Coffee	11,417,362	10,858,864	General merchandise	7,358,557	8,800,677
Hardware	587,437	555,954			
Hides	290,161	219,930	Total paying freight	28,756,451	30,721,327
Lard	165,362	214,051	Company's materals	2,326	3,250
Machinery	133,506	200,210			
Medicines	99,160	122,155	Grand total	28,758,777	30,724,577
Petroleum and oils	744,967	800,895			
Provisions	3,453,027	4,088,791	Total "up" traffic	15,309,338	17,545,563
Salt	3,507,562	3,745,253	Total "down" traffic	13,449,439	13,179,014
Soap	101,427	123,286			
Spirits	401,195	705,798		28,758,777	30,724,577
Sugar	496,728	285,463			

OPERATING OFFICIALS

The operating officials of the road are as follows:

Chairman, N. G. Burch, 23 Eldon Street, London, E. C.
Directors:
  Robert Cooper, Spring Place, Bexley, Kent.
  P. Cuthbert Quilter, 32 Old Jewry, E. C.
  G. R. T. Upton, Lincoln's Inn, W. C.
Managing director and secretary, T. Lee C. Pilditch, Finsbury Pavement House, London, E. C.
Consulting engineers, Sir Douglas Fox and partners, 56 Moorgate Street, London, E. C.
Acting general manager, Mr. Irvine, Mariquita.
Deputy general manager and chief accountant, G. Irvine, Honda, Colombia.
Master mechanic, F. Jamieson, Honda, Colombia.

PURCHASES

Purchases for the road are indicated by Acting General Manager Irvine, who should be addressed in care of the road at Mariquita, and are generally made through the office of the company in London. The purchasing agent in the United States is Bliss-Dallett Co., 118 Broad Street, New York City.

RIGHT OF WAY

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The maximum grade is one of 2 per cent compensated.

Curves.—The radius of the maximum curve on the road is 144 meters.

Fuel.—Wood and oil are used for fuel. Good coal can be secured in abundance on the Antioquia Railway, but the cost of transportation is too high, so wood is used. There are indications of petroleum along the right of way near the station of Mariquita.

Water.—Water is secured locally. Water stations are located at La Dorada, Guarinocito, Honda, Mariquita, San Lorenzo, Santuario, and Beltran, with a capacity of 9,000 liters.

Rails.—Rails weighing 60 pounds to the yard are used.

Signaling equipment.—Colored flags and lanterns are used for signaling.

Maintenance.—The roadbed is in poor condition. Dirt fill is used, and the road is not well graded.

Bridges.—There is one large steel bridge 400 feet in length over the river at Honda.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

The following is a comparison of the motive power and rolling stock in use on the road for the calendar years 1915 and 1925:

Equipment	1915	1925	Equipment	1915	1925
Locomotives:			Freight cars:		
50-ton tender engines (British)	2	------	Box cars	------	83
40-ton tender engines (American)	2	------	Flat cars	------	38
30-ton engines (American)	2	------	Cattle cars	------	14
10-horsepower motor cars	1	------			
Total	7	12	Total	103	135
Passenger cars:					
First class (capacity 42 each)	4	6			
Third class (capacity 50 each)	7	8			
Total	11	14			

Freight cars are of wood and steel, many of them the largest size in the country, carrying 15,000 kilos, or 15 metric tons weight. Some rail motor cars are in use.

BARRANCA BERMEJA RAILWAY

(TROPICAL OIL CO.)

Construction on this road was begun in July, 1923, by the Tropical Oil Co. The road has been constructed from Barranca Bermeja, a Magdalena River port, to Las Infantas, in the Department of Santander, a distance of 32 kilometers. The road is privately owned and is operated by the officials of the Tropical Oil Co. solely in the interests of that concern.

All purchases for the road are made by J. F. Lehan, whose address is "Care of Tropical Oil Co., Cartagena, Colombia."

Altitude.—The highest point on the road is at Las Infantas, about 100 meters above sea level.

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade is 3 per cent.

Curves.—The radius of the maximum curve is 100 meters.

Ballast.—Gravel is used as ballast.

Ties.—Ties are of native wood known as "carreto."

Rails.—Rails weighing 60 and 65 pounds are used.

Water.—The water supply is good. There are water stations at Barranca and Infantas.

Fuel.—Oil is used as fuel. Oil stations are located at Barranca and Infantas.

Signaling equipment.—There is no signaling equipment in use on the road.

Clearance.—The road has standard clearance limits.

Maintenance.—The roadbed is in good condition.

Bridges.—There are no bridges on the road.

Tunnels.—There are no tunnels.

The motive power and rolling stock on the road for the calendar year ended December 1, 1925, consisted of:

2 Baldwin steam locomotives.
1 gasoline switch engine.
16 flat cars.
8 box cars.

Repair shops are located at Barranca Bermeja and are adequate. The shops include a foundry.

NORTHEASTERN RAILWAY (UNDER CONSTRUCTION)

(FERROCARRIL DEL NORDESTE)

A concession for the construction of a railway connecting Bogota, Usaquen, Sopo, Tocancipa, Gachancipa, Suesca, Choconta, Tunja, Duitama, Soata, Capitanejo, and probably extending as far as Bucaramanga, was granted in 1922 to Arcenio Pieters, a Belgian citizen. Practically the entire road lies on the Bogota plateau, which varies in altitude from 8,000 to 9,000 meters above sea level. When completed it will be approximately 500 kilometers in length.

The road is being constructed by a syndicate known as the Société Nationale de Chemins de Fer en Colombie, under the supervision of the Department of Cundinamarca. At the present time the road is under construction from Bogota to Tunja, a distance of 150 kilometers. Approximately 37 kilometers of 1-meter-gauge track had been finished by the end of March, 1926. The line will pass through approximately level country, the maximum grade being 1.7 per cent compensated. There will be no tunnels on the road. The radius of the minimum curve is to be 150 meters. Rails weighing 66 pounds per yard, screwed to ties, will be used. As of December 30, 1924, the company had spent approximately 45,500,000 francs in construction work. In 1925 the capitalization of the company was increased from 7,500,000 francs to 22,000,000 francs. On December 31, 1925, the company had in Colombia rails and accessories for the construction of 100 kilometers of railway, 9 coal-burning locomotives (8 weighing 125 tons, and 1 smaller one for construction purposes), 80 freight cars of various types, and 20 combination passenger and freight cars. The company has had some difficulty in delivering this railroad material to Bogota because of the rather small size of the river boats and also on account of certain taxes and duties imposed by the Government. Purchases for the road are made by the general manager, Arcenio Pieters, who should be addressed in care of the Ferrocarril del Nordeste, Bogota, Colombia.

BARRANQUILLA-TO-CARTAGENA RAILWAY (PROPOSED)

The construction of a railroad between Barranquilla and Cartagena is a project which has long been entertained but up till now no actual steps have been taken to inaugurate it. Transportation between these two cities is afforded via the Magdalena River to Calamar and from there to Cartagena by the Cartagena Railway or the Dique Canal. Another route is via the Barranquilla Railway & Pier Co. (Ltd.), to Puerto Colombia and from there by ocean-going steamers to Cartagena. A short time ago a direct air service was inaugurated. In 1925 interest was aroused in the construction of a railway between these cities, and a concession was awarded on August 29, 1925, by the Department of Atlantico to Arturo de Castro for its construction from the city of Barranquilla to the limits of the Province. Mr. De Castro has also applied to the Department of Bolivar for a similar concession which would enable him to continue the proposed railway from the boundary of the Department of Atlantico through the Department of Bolivar to Cartagena. At the present time this proposition is being considered by the Government of the Department of Bolivar. The contract has not been approved or acted on by the National Government, so the awarding of it to

Mr. De Castro by the Province of Atlantico does not prevent the National Government from entering into direct negotiations with other interested parties. The Barranquilla Railway & Pier Co. (Ltd.) is also interested in the construction of this road, and it is understood that shortly they will make a proposition to the National Government in reference to its construction. The basis of negotiations will probably hinge on the extension of the concession for the continued operation of its railway from Puerto Colombia to Barranquilla, which expires in 1933. The Cartagena Railway strenuously opposed the construction of both this railway and the Central de Bolivar, alleging that these projects violate the terms of the concession granted for the construction and operation of the Cartagena Railway.

A copy of the concession awarded to Mr. De Castro by the Department of Atlantico is as follows:

The undersigned, to wit, Francisco J. Ucrós A., secretary of the treasury of the Department of Atlantico, in its name, duly authorized by the governor in compliance with Ordinance No. 60 of 1925, and hereinafter called the "Department," on the one hand, and Arturo de Castro P., of age, and a resident of this city, in his own name, hereinafter called the "concessionaire," on the other hand, for the purpose of revising and making additions to the contract agreed upon between the same contracting parties on September 22, 1924, in observance of Ordinance No. 40 of said year, and the Decree No. 3306 of July 24, 1925, of the Minister of Public Works (section of General Railway Administration), have signed the contract containing the following clauses, which shall supersede in toto the clauses contained in the contract signed by the same parties on June 24, 1925.

1. The concessionaire obligates himself to build, equip, maintain, and operate on his own account a railroad in accordance with article 2 of Ordinance No. 42 and article 2 of Ordinance No. 60 of this year, comprising as follows:

(*a*) A line encircling the city of Barranquilla, with stations and flag stations conveniently located, with starting point or terminal at a suitable place on the banks of the Magdalena River for connecting this line with a similar line that is being built on the eastern bank of said river up to the city limits of this capital; and

(*b*) A line that starts from Barranquilla and passes through Soledad, Malambo, Polonuevo, Sabanalarga, Molinero, Arroyo de Piedra, Luruaco, and Los Pendales, ending at a place called El Manglar, on the border of the Department of Bolivar. In case the final survey of the land requires that changes be made in this route, either for the greater stability of the road or in order to shorten its length, the route may deviate a distance of not more than 2 kilometers from any of the villages, but in any case the line must pass through Soledad and Sabanalarga.

2. In accordance with the aforestated ordinances, the enterprise forming the object of this contract shall be regarded and declared a public utility.

3. The concessionaire obligates himself to undertake and complete, at his own cost, the survey of the railroad network of Atlantico discussed in article 2 of Ordinance No. 42 of 1925. This survey shall include technical as well as economic factors that must be considered in determining the construction of said line, and the concessionaire obligates himself to submit to the Government a certified copy, which shall be deposited in the proper archives for a period of two years from the time this contract is approved by the Government of this Department. An official supervising engineer, whose salary shall be paid by the Department, and who shall be appointed by the Government and designated by the Ministry of Public Works, shall superintend this survey.

4. The following shall be expressly stipulated in accordance with article 2 of Ordinance No. 60, as cited:

(*a*) That notwithstanding the stipulation of (*a*) of article 2, as cited, the concessionaire obligates himself to select the shortest route and the one best suited to the interests of the railroad line discussed under (*b*) of article 2 of Ordinance No. 42 of 1925; suitability that shall be established from the conclusions drawn from the survey referred to in clause 3 as soon as it is approved by the Ministry of Public Works. When this approval has been obtained and it is found necessary to make changes in the main line of the route outlined under (*b*) of clause 1 of this contract, the final selection of such route shall be the subject of an agreement supplementary to this one; and

(*b*) That notwithstanding the terms of (*b*) of article 2 of Ordinance No. 60 of 1925, if, within two years from the date of the signing of this contract, the concessionaire shall not have constructed the railroad line referred to under (*a*) of article 2 of Ordinance No. 42, as cited, the Department shall declare the concession annulled as regards said line encircling the city of Barranquilla.

5. The concessionaire may construct the railroad line alongside any highroad or highway and follow it and widen it in case it is necessary, but no damage may be done to the road or drains, nor may any obstructions be allowed to stand that would hinder the free transit of vehicles, and in all cases a free space of at least 4 meters shall be left for such vehicles. The concessionaire may also deviate from the highway and take another definite direction when, in his judgment, the line would be benefited thereby.

6. When necessary to cross roads or highways the concessionaire may do so, but he must not leave standing any obstacles or obstructions that would hinder the free transit of vehicles; before making the crossing the concessionaire must previously notify the Department, so that the latter, if it so wishes, may designate a person who shall go to the place where the work is in progress and approve the contemplated crossing.

7. The railroad shall be of mechanical traction and propelled by electricity, petrol, alcohol, steam, gasoline, or other combustible. The concessionaire shall inform the Department of the kind of motive power that he intends to use. Any change in the motive power requires previous notification and approval of the Department.

8. The concessionaire obligates himself to construct the railroad and to develop it by availing himself of the improvements made in modern technics in this field, and as regards the width of the line he shall proceed in such manner as will permit of connecting it with a similar railroad line between Barranquilla and Puerto Colombia; but if, when beginning the work of construction, the concessionaire shall have obtained a concession from the Department of Bolivar that will allow the line to be brought up to the divisional line between that section and this Department, and connect with a railroad line extending over the territory of the Department of Bolivar and to be operated jointly with the railroad of Atlantico, he may give the latter line the width, between rails, most suitable for that purpose.

9. The materials that may be used in the construction, equipment, and service shall be previously specified to the Department, which may have them inspected before authorizing their use, and the concessionaire shall also pledge that the rails that may be used shall weigh at least 55 pounds per meter and be at least 10 meters long, and that there shall be 1,600 crossties per kilometer. The maximum gradients shall be a compensated 1 to 2 per cent, and the minimum curve radius 286 meters, adjusting them in each case to the ratios required by the engineering work.

10. The rolling stock shall consist of the following: For every 10 kilometers one locomotive, three passenger cars, and two other cars. The Department and the concessionaire together shall determine the amount of rolling stock required for periods of not less than five years, after the first two years of the usufruct of the line, and taking into account the needs of freight and passenger traffic. The concessionaire obligates himself always to keep the line and rolling stock in good condition. Compliance with this obligation shall be subject to the immediate supervision of the Department.

11. Within two years after the final approval of this contract the concessionaire obligates himself to submit to the Department the completed plans and section cuts of the main line up to the divisional line between this section and the adjoining Department of Bolivar. The work of construction shall be begun not later than one year after the day the plans are finally approved by the Ministry of Public Works.

12. If in the course of construction there should arise the necessity of modifying the technical part of the work, the concessionaire may make such changes in the plans already adopted, but he must submit the matter for the study and approval of the Department prior to making such changes.

13. The concessionaire obligates himself to deliver the completely constructed and equipped main line, up to the divisional line between this section and

the Department of Bolivar, within four years from the day the work is begun. The Department shall determine this date in an official notification sent to the concessionaire by the government.

14. The date of the starting and completing of the railroad line shall be confirmed by the presence of the government of Atlantico at the request of the concessionaire or his representative by means of a summary stating the views on the subject as between the latter and the Department and the commissioners whom said Department shall appoint for that purpose.

15. Each section of the line constructed may be given over to public service separately, to which end the Department will appoint the proper official who shall accept the said section and make a record of this fact.

16. The concessionaire obligates himself to acknowledge indebtedness and to pay to the Department a share amounting to 10 per cent of the liquid revenue derived from the profits. This share shall be remitted to the treasurer general of the Department, together with the proper balance sheet.

17. The tariff for passengers shall not exceed the following amounts per passenger per kilometer: First class, 3 centavos; second class, 1.5 centavos; third class, 0.5 centavo. The tariff for freight shall not exceed 15 centavos per ton per kilometer. The tariffs fixed on this basis shall not go into force without previous approval of the National Government.

18. Officials, civil and military, traveling on Government duty, and students traveling to private or public schools, shall pay one-half the stipulated rate; departmental employees, Catholic priests, diplomats, and prisoners accompanied by guards shall be carried free of charge. Likewise, the concessionaire or his representative obligates himself to carry free of charge all national, departmental, and municipal mail to stations at points where there are post offices.

19. The concessionaire may within the legal limits erect such telephone and telegraph lines as he may judge necessary for the proper service of the railroad that is the object of this contract, and the government of the Department can use these lines without any charge whatever in case of need.

20. The period of the concession for operating the railroad of Atlantico, and for the enjoyment of the usufruct by the concessionaire or his representative, as stipulated in article 3 of Ordinance No. 40 of 1924, shall be 50 years, reckoned from the day the Department inaugurates the first section of the line constructed, in accordance with clause 15 of this contract and clause 12 of the contract signed September 22, 1924, the present contract modifying and superseding it.

21. The Department obligates itself:

(*a*) To request from the proper authority the strict carrying out of the stipulation of article 1 of Law No. 27 of 1924 as regards exemption from import, consular, and other national taxes now levied, or that may be levied, for all materials, utensils, tools, and fixtures imported from abroad for the sole purpose of constructing and operating the railroad.

(*b*) To request from the proper legislative bodies exemption for the concessionaire from all departmental and municipal taxes.

(*c*) To obtain the subsidy that the national budget reserves in favor of railroads that may be built on departmental territory, charging to its account the expenses incurred in obtaining payment and acknowledgment of the sum in favor of the concessionaire.

(*d*) During the life of this contract not to permit the construction of another line or other lines that may connect the city of Barranquilla or any other point in the Department of Atlantico with the divisional line of the latter and that of the Department of Bolivar, or any other points within the Department of Atlantico, provided that there remain a distance of at least 30 kilometers on either side between these lines and the line that is the object of this contract.

(*e*) To allow the concessionaire the free use of Department-owned land, if required for the extension of the line, and the free extraction of such materials found on the land as may be required for the work, and the free use of waterfalls and streams found on such land; and

(*f*) To request for the concessionaire permission, as in the preceding paragraph, to use land owned by the State or municipality.

22. In accordance with the terms of article 4 of Law 97 of 1913 the Department permits the concessionaire to lay tracks and erect poles on streets of villages, wherever necessary, in constructing the railroad that is the object of this contract.

23. The Department may declare the contract legally annulled in any of the following cases:

(*a*) If the plans and section cuts are not submitted within the period stated in clause 11 of this contract.

(*b*) If the work of construction is not begun within the period stated in clause 11 of this contract.

(*c*) If the concessionaire does not strictly fulfill the stipulation stated in clause 13 of this contract.

(*d*) If, after starting the work, construction is interrupted for a period exceeding one year.

(*e*) If traffic is suspended for more than 60 consecutive days, except in cases of force majeure, duly confirmed; and

(*f*) In case there arises any of the causes stated in article 41 of the National Fiscal Code.

24. If there should arise one or more causes for annulment, as fixed by this contract, after a section of more than 20 kilometers of the line is put into public service, the Department will grant to the concessionaire a provisional period of at least 60 days in which to remedy such cause, and if the cause still persists after this period fixed by the Department, then the latter may declare legally annulled that portion of the line not yet constructed; but in no case may the Department declare legally annulled that portion of the line already constructed. If the Department declares annulment before the concessionaire has put 20 kilometers of the constructed line into public service, then all the works, plans, and constructed portion of the line, with all its branches and other rights held by the concessionaire, shall be placed, ipso facto, under the authority of the Department, without any indemnification whatsoever.

25. When suspension of the work is caused by delay on the part of the government in fulfilling any of its obligations, or through force majeure, the period of interruption thus occasioned shall not be reckoned in the time limits stipulated in clauses 11 and 13 of this contract.

26. When annulment is declared by the Department, the concessionaire may appeal to the court, in order that the latter may decide if the annulment decree conforms to the stipulations contained in this contract.

27. Any disputes or controversies that may arise between the contracting parties by reason of the interpretation of one or any of the clauses contained in this contract shall be decided by an arbitration committee composed of four members, two for each party, and in case of a tie they shall nominate a fifth member, and the question shall be decided by majority vote; if the disputes are of a technical nature they shall be decided by the Colombian Society of Engineers.

28. With previous permission of the Department this contract, in whole or in part, may be transferred to an individual, or to a national or foreign company, agreeable to the concessionaire, but in no case may this transfer be made to a foreign nation or government; in case the transfer is made in favor of a foreign individual or company it shall be expressly stipulated that the transferee accepts in full the stipulations of article 15 of Law No. 45 of 1888 "regarding nationality and naturalization," and these stipulations shall be incorporated in the respective deed of transfer.

29. When the transfer is made in favor of a foreign individual or company, in order to make such transfer valid, it is necessary that the respective deed be approved by the Department; it shall also be stipulated that said individual or company must not appeal to any foreign power or court in the matter of this contract, either because of, or by reason of its fulfillment or nonfulfillment, and in no case may it request the diplomatic intervention of a foreign government.

30. In case the concessionaire can not obtain from private owners acquisition of the land required for the construction and extension of the railroad that is the object of this contract, the Department shall undertake, within legal limits, the proper expropriation proceedings, payment for such lands, in every case, being borne by the concessionaire.

31. The concessionaire shall have the right, if he so desires, to organize a company or companies for the organization and exploitation of the railroad that is the object of this contract, the constitution of said companies adhering strictly to the provisions of the Colombian laws; he reserves for himself the right to raise loans, amortizable within the period of the concession, and guaranteed by the operation and usufruct of the railroad; such guaranty shall expire ipso facto at the termination of the concession. In no case may the concessionaire contract loans with foreign governments.

32. The concessionaire may construct lines branching off from the main line to any intermediate towns whose industries make it worth while, but before doing so it is necessary, in every case, to obtain the permission of the Department.

33. The concessionaire shall deposit a guaranty in favor of the Department of Atlantico to the amount of $10,000 legal gold, backed by two guarantors, each of whom owns real estate to the value of at least $10,000, as guaranty of the fulfillment of the obligations of this contract. The guaranty must be deposited not later than the day before the work of construction is begun.

34. The concessionaire shall draw up such rules as he deems necessary for the care, safety, use, and construction of the line, and the materials used. These regulations shall be subject to the laws and ordinances now in force, and shall be submitted to the Department for approval. In no case shall the concessionaire be obliged to do any construction work on the railroad, nor make any changes that are not absolutely required for the service and traffic of the line, nor of a nature that does not appertain specifically to the work that is the object of this contract, except in cases that call for the rebuilding of national, departmental, municipal, or private structures, if these may have been damaged or destroyed by reason of the construction or operation of the railroad.

35. The Department shall appoint a superintendent, with the title of engineer, who shall at any time examine the books, accounts, materials, works, etc., of the railroad, and the concessionaire shall be required to show them to this official upon request, so that the latter may inform himself of the progress and development of the work. The concessionaire shall be required to comply with the suggestions made by the superintendent, and the governor of the Department may force him to do so in case he refuses. The governor of the Department may appoint a special committee to inspect the line and its branches if he deems it necessary.

36. Upon the expiration of the 50 years granted for the concession and usufruct of the line, this railroad, free from all encumbrances, with all its branches and dependencies, and all in good condition, shall pass into the control of the Department of Atlantico without any indemnification whatsoever. At the expiration of the concession, the concessionaire must deliver the line to the Department, together with an exact inventory properly drawn up by the officials appointed by the Government for that purpose.

37. This contract shall under no circumstance prevent the strict application of the agreement of September 22, 1924, hereinbefore cited. So the stipulation contained in clause I implies that, although the main line was constructed by the concessionaire in accordance with clause 1 of this contract, he may, nevertheless, construct, equip, and operate the line in accordance with the former contract.

38. The contracting parties expressly declare:

(*a*) That they consider incorporated in this agreement the provisions of the regulations issued by the Ministry of Public Works under date of May 20 and July 8, 1920, regarding surveys, construction, and operation of railroads.

(*b*) That as regards the contribution that the Department must make to the subsidy granted, or that may be granted, by law to the railroad which is the object of this contract, such contribution shall be subject to the provisions of the Executive Decree No. 1077 of July 10, 1925.

39. This contract, after being approved by the Department, will not require the approval of the Assembly, in conformity with article 3 of Ordinance No. 60 of 1925, and it shall be recorded in a public instrument. The contracting parties agree to submit, for the approval of the National Government, all those clauses in this contract that refer to the nation.

In witness whereof this contract is signed in triplicate, at Barranquilla, August 29, 1925.

FRANCISCO J. UCROS A.,
Secretary of the Treasury.
ARTURO DE CASTRO,
The concessionaire.

Government of the Department of Atlantico, Barranquilla, September 2, 1925.

Approved:

EPARQUIO GONZALEZ,
Governor of Department of Atlantico.
FRANCISCO J. UCROS A.,
Secretary of the Treasury.

GREAT BOGOTA ATLANTIC RAILWAY (PROPOSED)

This project calls for the construction of a railway connecting Bogota with the Atlantic coast, and is one which has been talked of for some time. Several firms have made propositions to the Government for its construction but no action was ever taken by the Government. In view of the present development of the railways, it is believed that if such a road were to be constructed it would be a prolongation of one of the railways now starting at Bogota and in accordance with the Government's trunk-line plans. However, on October 17, 1923, the following bill was introduced in the Colombian Congress which would authorize the construction of this railway. Up to the end of the calendar year 1925 no action had been taken on it, although the Société Nationale de Chemins de Fer en Colombie, which has at the present time a concession for the construction of the Ferrocarril del Nordeste, has presented a proposal to the Government for its construction:

ARTICLE 1. The Government shall proceed within the shortest possible time to contract for the construction of an electric or steam railroad joining the capital of the Republic with the Atlantic coast, the specifications of which, as regards gauge, maximum grades, and curves, shall be such as to guarantee minimum freight rates, high speed, and a very low cost of construction and operation.

ART. 2. The title to this road shall at all times belong to the nation but the builders shall be entitled to operate and to manage the same until the bonds are entirely redeemed. This period may in no case exceed 50 years; but if within this time the bonds should not be redeemed, the nation shall in some other manner protect the interests of the bondholders on whatever balance may remain outstanding.

ART. 3. The Government shall at all times reserve the right to inspect the books and papers of the concessionaires, to fix the rates, and to supervise the conditions of safety, hygiene, policing, etc., of the line for the purpose of harmonizing the interests of the concessionaires with a reasonable rate schedule for the benefit of the traffic.

ART. 4. The Government shall require from the concessionaires whatever guaranties it may consider advisable or necessary to assure sufficient solvency on the part of the latter for the completion of the road within a period not in excess of eight years, counting from the date of signing the contract, without stipulating any option, and in order that the survey of the line best answering the requirements of article 1 may be commenced within a period not exceeding one year, counting from the same date. Said survey shall comprise the maps, graphic charts, estimates, descriptive memoranda, etc., upon which the Government shall determine definitely, and shall also stipulate with absolute clarity such clauses covering penalties and the sovereign rights of the nation as it may deem advisable.

ART. 5. The Government shall bind itself to issue in series sufficient bonds to cover the cost of construction of the road, floating said series year by year according as funds are needed for construction. These issues shall cover sections of road not less than 40 kilometers in length each, entirely completed and equipped to the satisfaction of the Government, the concessionaires being obligated to subscribe to the total amount of bonds issued. The proceeds of said bond issues shall be deposited in a bank to the order of the Government, but the latter may not dispose of the funds for any purpose other than the cost of construction of the sections of railway, which sections shall be delivered to the Government by the concessionaires as completed in accordance with the contract. The nation shall not allow interest except as funds are deposited in the bank to the order of the Government, these funds being the proceeds of the bond issues and to be applied to the construction and equipment of the line.

ART. 6. There shall be applied to the amortization of these railway bonds the proceeds of the tax on exploitation of petroleum and any other funds derived from national property or revenue not assigned to any service included in the national budget.

ART. 7. Amortization, initial discount, interest rate, and interest service on the bonds shall be fixed by the Government under the most favorable conditions possible.

ART. 8. The periods for amortization of the different series of bonds shall be fixed in the contract. Said amortization shall not commence until 11 years from date of the first issue, beginning with the first series and ending with the last 50 years from the date mentioned.

ART. 9. To cover the interest service during construction, the Government shall also issue bonds which shall be taken up by the concessionaires in the same manner as the construction bonds.

ART. 10. The operating revenue from the road shall be applied by the concessionaires to the expenses of administration and maintenance of way and to the interest service on the bonds issued for the construction and equipment of the line. The concessionaires may not retain as profit any part of the operating revenue until after the expenses of administration and maintenance of way have been covered, as well as the interest service on the bonds outstanding, including those corresponding to the current year. In any years which may not show a net profit after taking care of the interest service, the Government shall stand good for the balance required, and shall bind itself to effect such payments in the time limits stipulated.

ART. 11. The Government may, if it deems it necessary, place a first mortgage on the whole line on behalf of the nation and to secure interest to the bondholders.

ART. 12. The commission payable for the construction may not exceed 10 per cent.

ART. 13. The Government shall have the right to name an official inspecting engineer, whose functions shall be specified in a contract. The pay of this official shall be fixed by the Government, and he shall not be a shareholder nor have any interest of any kind in the construction company.

ART. 14. The Government may also cede national lands near the line for the object of agricultural colonization and without exceeding the terms fixed under Law 104 of 1892.

ART. 15. This colonization shall be made for account of the construction company in accordance with Colombian laws, the Government having the right to make selection of immigration.

ART. 16. The national lands ceded by reason of the construction of this railway shall be delivered by the company to the colonists in fee simple and within a term of not less than three years from the date of termination of construction of the road. In all cases Colombian colonists shall have preference. The lands not colonized three years after the completion of the railroad shall be returned to the dominion of the nation.

ART. 17. In case the contractors agree to exploit the mineral iron deposits existing in national lands they may exploit them free of taxes, provided that there shall be a daily production of not less than 500 tons of ingots of this metal. They may in this case take the mineral coal and limestone necessary for reducing the iron ore (taking them under the same conditions as for the iron ore) from the national lands, which for this purpose shall be adjudicated to the contractors.

ART. 18. If the Government should not resolve to construct by its own administration, but to make contracts for the construction of the branch lines to Tunja, Puerto Berrio, Bucaramanga, Cucuta, and other points, the contractors shall have the preference, other conditions being equal.

ART. 19. Under these conditions the contract shall not require the approval of Congress.

MEDELLIN-TO-GULF OF URABA RAILWAY (PROPOSED)

The history of this road dates to 1905, when a concession was granted to an American for the construction of a railway connecting the Gulf of Uraba with Medellin. After the work of establishing the port and 1 kilometer of track had been completed the project was suspended, and in 1909 the contract was declared void. At the present time no work is being carried on and no definite proposal is on foot to construct this railway.

EL CHOCO RAILWAY (PROPOSED)

In the year 1920 the construction of the two railways in El Choco, one extending from the port of Pedrero on the Cauca River to Negria on the San Juan River and the other connecting the cities of Cartago and Istmina, were proposed. No actual construction work was undertaken at that time, however, but in Law 80 of November 6, 1923, money from the American indemnity fund was provided for the construction of a railroad in this district.

At the present time no action has been taken on either of these projects.

NACEDEROS-ARMENIA RAILWAY (PROPOSED)

The history of this road dates to 1923, when a contract was entered into between the Department of Caldas and the National Government for the construction of a railway connecting Nacederos with Armenia, a distance of 57 kilometers. Funds acquired from the American indemnity fund are to be used for the construction of this railroad. The road will be constructed by the Department of Caldas for the Government. Purchases will be made through the central office in Bogota in the manner indicated on page 33.

BAHIA HONDA-TO-BOGOTA RAILWAY (PROPOSED)

It is understood that a proposal has been made to the Colombian Government by J. Boigt, representing a group of French bankers, to construct a railway from Bahia Honda to Bogota. It is estimated that the cost of construction of this road will approximate 20,000 pesos per kilometer. Up to the present time no action has been taken on it.

MEDELLIN TRAMWAY

The tramway system in Medellin is operated as a municipal enterprise and consists of approximately 28.4 kilometers of track. The line was inaugurated on October 12, 1925. The following table shows the financial and traffic condition of the tramway system between October 12 and December 1, 1925:

	Value, pesos
Passengers moved since the inauguration of the first line, October 12 to December 1, 1925	933,381
Profits	385
Profits on car advertisements	11,091
Profits on transportation:	
Tranvia de Oriente	199
Tranvia de Envigado	544
Total	945,600

The number of tickets sold to December 31, 1925, was 1,255,101, valued at 61,255 pesos; number of regular trips, 1,129,526; number of extra trips, 22,177; car hours, 385,521; total kilometers run, 4,029,310.

ECUADOR

GENERAL FEATURES OF SITUATION

Ecuador is bounded on the north by Colombia, on the east and south by Peru, and on the west by the Pacific Ocean. The country is crossed from north to south by two parallel ranges of the Andes. Between the mountains and the Pacific Ocean is a narrow stretch of coastal plain, while to the east is the well-watered plain called the Oriente. The principal rivers flowing through the regions of El Oriente and Loja, in the Amazon Basin, are important. The Napo constitutes the frontier with Colombia, and others are the Curaray, Nigre, Pastaza, Morona, Paute, and Zamora. Among those flowing to the Pacific from the Andes are the Mira, Esmeraldas, Chones, Daule, and Guayas.

The transportation facilities of the country are poor. Few of these rivers are navigable, and there are practically no lakes or canals. Highways have not been constructed to any appreciable extent. The principal means of transportation is on mule back over mountain trails.

On June 30, 1925, Ecuador had 470 miles of railroad in operation, while it plans to construct approximately 1,000 additional miles. The lack of a definite railroading policy seems to be a handicap, the overcoming of which should vastly increase the prosperity of the country. Its natural resources are as yet relatively undeveloped. Unfortunately, there have been attempts in the past to construct immense projects which could not be completed, but it is felt that in recent times this policy has changed somewhat so that now Ecuador is actually considering the construction of only those railroads which it finds some means of completing.

The following table shows the amount of money spent on various railway projects during the fiscal years ended June 30, 1923 and 1924:

[Sucre, Ecuadorian currency unit, equals $0.4867 United States currency]

Railroad	1922-23	1923-24
	Sucres	*Sucres*
Quito-Esmeraldas (including San Lorenzo section)	659, 350	616, 607
Sibambe-Cuenca	464, 519	343, 499
Ambato-Curaray	71, 617	78, 617
Bahia-Chone	59, 990	66, 823
Manta-Santa Ana	37, 489	--------
San Juan Chico-Riobamba	28, 693	396, 179
Puerto Bolivar-Loja and Cuenca	33, 724	61, 975

Of the 9,384,000 sucres appropriated for public works in the national budget for 1926, 3,952,000 sucres will be expended in the construction, operation, and conservation of railways, as follows:

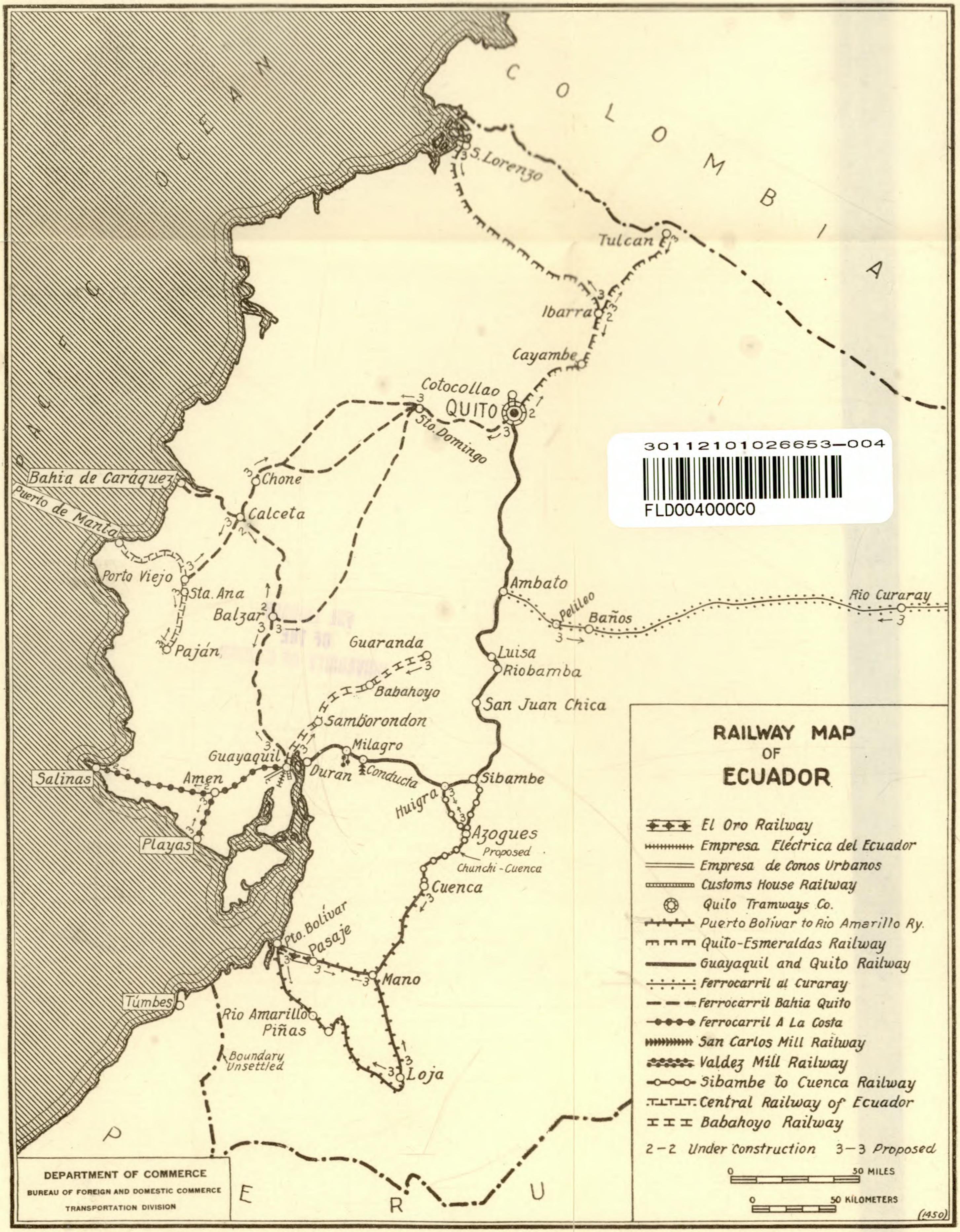

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FIG. 6

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

	Sucres		Sucres
Quito-Esmeraldas	910,000	Bahia-Chone	63,000
Sibambe-Cuenca	1,000,000	Manta-Santa Ana	56,000
Puerto Bolivar-Loja	1,300,000	Guayaquil to the coast	435,000
Ambato-Curaray	88,000		
El Oro	100,000	Total	3,952,000

The amount to be expended for roads and highways during 1926 is given as 1,378,000 sucres.

In the following pages will be found a detailed description of each of the railways in operation or on which contemplated construction is imminent.

GUAYAQUIL & QUITO RAILWAY

SURVEY OF DEVELOPMENT

The history of this road dates back to 1871, when plans were formulated for the construction of a railway from Guayaquil to Quito. It was in this year that actual construction was begun on the road. In this year 13 miles of track were laid from Yaquachi. In 1875 the railway had been completed as far as Barragnetal, a distance of 28 miles, and in 1880 as far as Chimbo, a distance of 42 miles. Construction work on the road stopped because of finances until 1885, when an effort was made to extend the line to Sibambe. After a few miles of track were laid no further work was done. In 1887 the line was extended from Yaquachi to Duran, its present southern terminus. During the next few years extensive surveys were made to construct the road between Chimbo and Quito, but no new construction was undertaken. In the meantime the road from Duran to Chimbo was neglected and fell into disrepair.

In 1897 Archer Harman, of New York, became interested in the possibilities of the construction of the railroad, and in June of that year secured a contract from the Government of Ecuador for the construction of a railway between Chimbo and Quito and the rehabilitation of the road previously constructed from Duran to Chimbo. Mr. Harman organized the Guayaquil & Quito Railway Co., which was incorporated under the laws of the State of Delaware on September, 1897. This company acquired a concession from the Government of Ecuador, valid for 75 years from the date of completion of the line, to construct a railway from Duran to Quito, together with docks and wharves at Guayaquil and Duran and the provision of ferry facilities between Duran and Guayaquil. Under this concession the railway was to be completed by June 14, 1907.

By 1903 the line was in operation as far as Quamote, but, owing to unexpected difficulties, the cost exceeded the first estimate. In order to provide further funds a new contract was made on September 30, 1908, between the company, the bondholders, and the Government. Under this arrangement in June, 1908, the road was opened to traffic over a total distance of 278½ miles.

In addition to the main line a branch extending from Luisa, 8.8 miles, to Riobamba, was constructed. Recently the main line to the railroad has been changed so that the line now deviates from its original route, extending from San Juan Chica to Riobamba direct and from there to Luisa, where it resumes its regular course. This so-called cut-off shortens the line approximately 12 miles. With the opening of this section in May, 1924, the through line between Luisa and San Juan Chica was abandoned, although the rails have not yet been taken up. Under a governmental decree this cut-off is considered part of the Guayaquil & Quito Railway and as such was mortgaged to the bondholders in substitution for the abandoned stretch between Luisa and San Juan Chica. The right of way between Luisa and San Juan Chica is still held by the company. The expenses incurred in the construction of the cut-off amounted to 587,385 sucres.

Early in 1925 the railroad experienced considerable damage as a result of heavy rains. In order to pay for repairs the company requested authority for a 25 per cent increase in tariffs, but this was refused. After considerable negotiation the Government, on April 24, 1925, purchased the shares of the road held by the Inca Co., which gave it control of the road. A copy of the contract is as follows:

NATIONALIZATION OF THE GUAYAQUIL & QUITO RAILWAY

GUAYAQUIL, ECUADOR, *April 24, 1925.*

No. 469.—The president of the senate in charge of the executive power agrees to authorize the Ministers of the Interior, Public Works, and Treasury to represent the Government of Ecuador in the execution of a contract by public deed with Mr. Evermont Hope Norton, holder of a power of attorney from the Inca Co., on whose behalf he sells to the Government of Ecuador 57,069 shares of preferred and common stock of the Guayaquil & Quito Railway Co., in accordance with the following conditions:

1. The Inca Co., through its representative, Mr. Evermont Hope Norton, sells to the Government of Ecuador 57,069 shares of preferred and common stock of the Guayaquil & Quito Co., which shares represent a nominal value of $100 U. G.[1] each, and of which 28,638 are of the common stock Class B and 28,431 of the preferred stock. Included in the latter are 8,000 shares deposited with Messrs. Glyn, Mills, Currie & Co., as a guaranty of the contracts entered into between the Government of Ecuador and the Guayaquil & Quito Railway Co.

2. The Inca Co. shall deposit within 60 days the titles to the shares sold, with the exception of the 8,000 preferred shares which are deposited with Messrs. Glyn, Mills, Currie & Co., in possession of the Guaranty Trust Co., of New York, National City Bank, of New York, New York Trust Co., and Bank of America, of New York. The company shall likewise deposit a letter of instruction, signed by the Inca Co. and the Guayaquil & Quito Railway Co., addressed to Messrs. Glyn, Mills, Currie & Co., London, in which it shall be stated that in accordance with this contract the 8,000 preferred shares will pass to the property of the Government of Ecuador and will in consequence be at the disposal of the said Government, and shall deposit in addition power of the seller, with the consul general of Ecuador in London, so that, in the name of the Inca Co., he may exercise all the rights and actions which the company has over the preferred shares and also so that he may indorse all titles to those shares, if necessary, in favor of the Government of Ecuador in conformity with the statutes of the Guayaquil & Quito Railway Co. On the above being completed the "Banco Depositario," which will for the purpose of this agreement be hereinafter referred to as the "trustees," will give written advice to the consul general of Ecuador in New York when the deposit of the said shares, letter of instruction, and power has been effected.

3. The trustees will ascertain whether the titles to the shares which are being sold are duly registered according to the series and order corresponding to the respective books of the Guayaquil & Quito Railway Co.. and that they are actually in force and that the shares are valid and in accord with the certificates and statutes of the company. The minister of Ecuador in Washington and the consul general of Ecuador in New York shall also have the right to examine the titles deposited and the books of transfer and registration of the shares of the Guayaquil & Quito Railway Co. and to take an attested copy of the entries therein should they consider this necessary.

4. The price of the 57,069 shares, the subject matter of this contract, is $600,000 U. G. On account of this amount the Government of Ecuador shall

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[1] This abbreviation, used in the original contract, apparently stands for "United States gold."

deposit to-day with the Bank of Pichincha, Quito, the sum of 400,000 sucres, which is accepted as being equivalent for the purpose of this contract to $100,000 U. G. This bank shall deliver this sum to the order of Mr. James C. Gillespie as soon as they receive advice from the trustees referred to in clause 5. The balance, namely, $500,000 U. G., shall be deposited by the Government with the trustees in New York within 20 days from the time the consul general in New York receives the advice mentioned in clause 2. This deposit being made, the Inca Co. will take steps to see that the six directors elected by the holders of the preferred shares and Class B present their resignation to these posts so that they may be duly replaced by candidates appointed by the Government of Ecuador, a list of whom will be handed to the trustees along with the sum of $500,000 U. G. If the said resignations and replacements are not effected the Inca Co. will call a meeting of the ordinary shareholders for the purpose of electing directors, and the six candidates nominated by the Government of Ecuador shall be duly elected by votes from the holders of preferred shares and Class B shareholders.

5. As soon as the change in the directorate is completed the trustees will pay to the Inca Co. $500,000 U. G. deposited by the Government of Ecuador and will send a cabled advice to the Bank of Pichincha, so that the said bank may deliver the 400,000 sucres in accordance with the stipulations contained in clause 3. The trustees shall deliver to the consul general of Ecuador in New York the following: The titles of the shares deposited, which will be duly indorsed to the Government of Ecuador; the letter of instruction to Messrs. Glyn, Mills, Currie & Co.; and the power mentioned in clause 2.

6. The Inca Co. guarantees that the Guayaquil & Quito Railway Co. will not enter, between the present date and the time when the directorate shall be changed according to what is established in clause 4, into any extraordinary obligations which in all may amount to over 25,000 sucres, and that it shall likewise not recognize any previous obligations which do not figure in the current account books. In the event of the Guayaquil & Quito Railway Co. entering into any obligations contrary to those mentioned in the preceding paragraph, it will be in order for the Government of Ecuador to desist from the present contract once such action is verified.

It is agreed that until the Government pays the total price of the shares the Inca Co. shall exercise the rights and privileges to which it is entitled as sole owners of these shares and exercise all rights of ownership according to the law and the statutes of the Guayaquil & Quito Railway Co.

8. If the Government should not effect the deposit of the $500,000 U. G. mentioned in clause 3, the Inca Co. may consider this contract void and recover the shares deposited and also draw from the Bank of Pichincha as a fine the 400,000 sucres deposited there as per clause 4. The Inca Co. will incur a fine for the equivalent amount if it should not deposit the titles to the shares, the letter of instruction, and the power referred to in clause 2.

9. Any controversy between the Inca Co. and the Government will be settled by foreign or national arbitrators named by each party. In the event of disagreement between the arbitrators they shall appoint a third arbitrator whose decision shall be final. The arbitration will be carried out in accordance with the laws of this nation.

10. The Inca Co. shall not be obliged to pay any taxes in connection with this contract.

11. This contract is considered irrevocable whatever the real or effective value of the shares in the market may be.

12. The attested copies of this contract shall be sent to the trustees, the Bank of Pichincha, and Messrs. Glyn, Mills, Currie & Co. for fulfillment of any action which may correspond to each of the above-mentioned parties.

13. The commission or fee in connection with this contract will be for account of both parties in equal proportion.

(Signed) E. H. Norton,
P. Jaramillo A.,
Minister of Interior and Public Works.
M. A. Albornoz,
Minister of the Treasury.

Quito, *April 13, 1925.*

At the present time the road is 278 miles in length.

DIRECTORS AND OPERATING OFFICIALS

The directors and operating officials of the road for the calendar year 1924 are as follows:

- Directors:
  - Leroy W. Baldwin.
  - Charles Beekman.
  - Charles W. Cox.
  - Juan Cueva.
  - T. H. Powers Farr.
  - Gustavo R. de Ycaza.
  - Frank Feuille.
  - Archer Harman.
  - Erskine Hewitt.
  - Arthur Turnbull.
  - Vanderbilt Webb.
- Executive committee:
  - Gustavo R. de Ycaza.
  - T. H. Powers Farr.
  - Erskine Hewitt.
  - Arthur Turnbull.
- Officers:
  - President, Archer Harman, Ecuador and New York.
  - Vice president, T. H. Powers Farr, New York.
  - General manager, John C. Dobbie, Ecuador.
  - Secretary and treasurer, Albert C. Watson, New York.
  - Purchasing agent, Albert C. Watson, New York.
  - General counsel, A. Romo Leroux, Ecuador.
  - Auditor, Herbert L. Sanborn, Ecuador.
  - Chief engineer, W. C. Simmons, Ecuador.
  - Superintendent of motive power, Martin Dunn, Ecuador.
  - Superintendent of transportation, George W. Morrell, Ecuador.
  - Superintendent of terminals, A. N. Paget, Ecuador.
  - Freight and passenger agent, L. V. Salvador, Ecuador.
  - General storekeeper, Raymond J. Wilderoter, Ecuador.
  - Chief surgeon, Max Meitzner, Ecuador.

PURCHASES

Purchases for the road are indicated by the general manager in Ecuador and made directly through the New York office of the company, 25 Broad Street.

FINANCES

The road has been subject to financial litigation during most of its existence. The following extract regarding the road's financial condition is taken from the Stock Exchange Yearbook for 1925:

> The company issued ordinary and preference shares as well as 6 per cent bonds, the last mentioned being guaranteed as to both principal and interest by the Government of Ecuador, with a lien on the customs receipts. Although sometimes there was delay, interest on the bonds was fully met down to the coupon due January, 1907, while as regards the service of the bonds due July, 1907, the Government paid over the corresponding sum to the company, to be applied, however, to construction purposes, in view of the delay in completing the line. In September, 1907, a meeting of holders of the bonds took place in London, at which the appointment by the Council of Foreign Bondholders of a committee of Guayaquil Railway bondholders was ratified and the council was authorized to take such steps as they might consider expedient in the bondholders' interests. In accordance with this authorization Mr. James P. Cooper, the secretary of the council, proceeded to Ecuador in August, 1908, and entered into a provisional arrangement with the Ecuadorian Government and the railway company, which was duly carried into effect. In accordance with this agreement the coupon due July, 1907, on the old bonds was surrendered, while the coupons due January and July,

1908, and January, 1909, were met by the issue of an equivalent amount of Ecuadorian Government 4 per cent salt bonds, a notice of which will be found elsewhere.

The Government is to continue to remit the same amount as formerly for the service of the bonds, but interest and sinking fund on the prior lien bonds (the proceeds of which were to be applied to the purchase of new rolling stock and the carrying out of certain repairs and improvements to the railway, etc.) are made a first charge on the Government remittances, and the interest on the old railway bonds has been reduced from 6 to 5 per cent, the sinking fund remaining at 1 per cent, while in compensation for the reduction of interest on the bonds the holders received 10 per cent in deferred certificates. These certificates, which bear no interest, are repayable out of one-quarter of the surplus net earnings of the railway after payment of the interest and sinking fund on the bonds. When the prior lien bonds are all amortized the amount to be remitted by the Government is to be correspondingly reduced. The bank in which the customs revenues are deposited was to set aside daily as from January 1, 1909, without intermission throughout each year, the necessary quota of the annual service for the railway bonds, and remittances were to be made each fortnight to the bankers in London charged with the service of the bonds. There have been at various times suspensions of the remittances, and the service of the bonds has been met as detailed below in the notices of the bonds.

In March, 1920, a decree was issued providing for the setting aside of 22 per cent of the import duties for the service of the bonds. In December, 1921, 1,027,941 sucres, representing the existing deposits in the Banco Comercial y Agrícola on account of the service of the railway bonds, was transferred to the Commercial Bank of Spanish America at Guayaquil to be held to the order of Glyn, Mills & Co., and not to be withdrawn without the consent of the Government, while the rate of exchange remains above par (still on deposit at December 31, 1924). During 1922, 1923, and 1924 the Government deposited further sums in Banco Comercial y Agrícola, where there remained on deposit at October 31, 1924, about 1,366,000 sucres.

In October, 1923, the Congress of Ecuador approved an ad referendum arrangement between the Government and the Ethelburga Syndicate (Ltd.), for the settlement of Ecuador's external debt—not yet (December, 1924) carried into effect.

In 1911 Messrs. Speyer & Co., of New York, made a loan of £300,000 to the Government of Ecuador, taking as their principal security 50 per cent of the export duties, and in April of that year Messrs. Speyer gave an undertaking to the Council of Foreign Bondholders that the sums collected by them from such duties, which are unconditionally and preferentially pledged to the Guayaquil & Quito Railway bondholders under existing contracts, should be placed to a special account pending a settlement with the holders of the railway bonds. In October, 1915, Messrs. Speyer gave notice of their intention to terminate this arrangement, whereupon the council instituted legal proceedings against them and obtained a preliminary injunction in the New York courts. At a meeting of the holders of first-mortgage bonds held in London in February, 1916, a resolution was passed authorizing and requesting the council to proceed with the litigation with the object of securing restitution to the bondholders of the money collected by Messrs. Speyer from the customs, and calling on the bondholders to lodge with the council on such terms and conditions as the council might deem advisable coupon No. 28 due January 2, 1913, for the purpose of providing funds for the prosecution of the action. In August, 1917, judgment was delivered by the United States District Court against the council, and in March, 1918, the Circuit Court of Appeals affirmed the decision of the lower court.

The authorized capital stock is $12,283,000, all of which has been issued (in common and preferred) and is outstanding, and $13,294,000 funded debt authorized and issued, of which $11,468,000 is outstanding.

Seven million thirty-two thousand dollars ordinary shares of $100 each, making, with the $1,000 of special voting shares below, the total authorized, of which $3,445,680 was issued to the Ecuadorian Government as consideration for the concession. The shares owned by the Government are known as A, and the remaining $3,586,320 as B; they have no capital distinction, but holders of the former have the right to appoint two directors, and holders of the latter (together with the preference) the right to appoint six directors. No dividend has ever been paid.

One thousand dollar special voting shares, known as C shares, and held by the Council of Foreign Bondholders, these conferring the right to appoint three directors, and ranking equally for dividend with the ordinary shares.

Five million two hundred and fifty thousand dollars 7 per cent cumulative preference shares at $100 each, being the total authorized. No dividend has ever been paid.

Ten million seven hundred and thirty-two thousand dollars 5 per cent mortgage bonds of $1,000 each, outstanding balance of $10,808,000 authorized and issued. These bonds formerly carried 6 per cent interest, and were guaranteed as to both principal and interest by the Government of Ecuador by means of a first lien on the customs revenue as well as by a first mortgage on the railway, but by the agreement of 1908 the remittances by the Government are in the first place charged to the prior lien bonds (see below). The interest dates are January 2 and July 2, and the Government can redeem the bonds at any time within 50 years from the date of issue at 110 per cent, and thereafter at par, while it was provided that a sinking fund of 1 per cent per annum should be set aside, applicable to purchases when the price is under par, and by drawings when it stands at or over par; maturity July 1, 1931. Payments in London at current rate of exchange by Glyn, Mills & Co., 67 Lombard Street, E. C. 3 —, and in New York. Recent interest payments: Coupon due July, 1910, met in January, 1913; coupon due January, 1911, met in May, 1913; coupon due July, 1911, met in September, 1913; coupon due January, 1912, met in December, 1913; and coupon due July, 1912, met in April, 1914; subsequent coupons being in arrears, while the redemption service has not been effected since the arrangement of 1908 came into operation, with the exception of the purchase of $76,000 of bonds on account of the July, 1909, amortization. Prices in official list: Bonds, 24¾ ; ditto with certificate attached, 36.

Six hundred and fifty-two thousand dollars 6 per cent prior lien mortgage gold bonds of $1,000, outstanding amount of $2,488,000, of which $2,253,000 was sold in London in February, 1909, at £184 13s. 9d. per bond. Coupons, January 2 and July 2. Repayable at par January 2, 1930; redeemable from cumulative sinking fund of 2½ per cent per annum from date of issue applicable to tenders of bonds when the price is below par and by half yearly drawings (in June and December) at par when the bonds are at or above par, while they may be redeemed by the company at any time at 105 per cent on six months' notice. The bonds are secured by a preferential mortgage on all the property of the company, and have a prior charge in front of the above-mentioned mortgage bonds on the amount which the Government of the Republic of Ecuador is to remit annually, as stated above, and the bonds are guaranteed unconditionally as to principal, interest, and sinking fund by the Government of Ecuador, being secured by a first charge and lien on the customs revenue of the Republic. Payments by Glyn, Mills & Co., 67 Lombard Street, E. C. 3.

Coupons due January 2, 1917, to January 2, 1919 (inclusive), were met in March, 1919; due July 2, 1919, at maturity; due January 2, 1920, on April 7, 1920; due July 2, 1920, to January 2, 1925, at or few days after maturity (January, 1925, coupon (No. 32) at £6 ½d. per $30). Amortizations (by public tender): Balance of thirteenth and fourteenth ($87,000 for £15,764) in July, 1919; fifteenth, sixteenth, and seventeenth ($149,000 for £29,082) in October, 1919; eighteenth, nineteenth, and part of twentieth ($118,000 for £22,760) in July, 1920; balance of twentieth and twenty-first, twenty-second, and twenty-third ($211,000 for £43,056) in October, 1920; twenty-fourth ($80,000 for £18,170) in January, 1921; twenty-fifth ($94,000 for £17,812) in July, 1921; twenty-sixth ($83,000 for £16,473) in January, 1922; twenty-seventh ($76,000 for £16,000) in August, 1922; twenty-eighth ($76,000 for £15,915) in January, 1923; twenty-ninth ($78,000 for £16,612) in July, 1923; thirtieth ($81,000 for £18,189) in January, 1924; thirty-first ($83,000 for £18,670) in July, 1924; thirty-second ($84,000 for £17,758) in January, 1925. Prices in official list (per $500 bond), 107.

A comparison of the balance sheets and income statements of the road for the calendar years ended December 31, 1919 and 1923, is presented below. No financial report was made for 1924, it being decided that the 1925 report (not yet available) should include both years. The condensed general balance sheet, December 31, 1919, was as follows:

ASSETS

	Sucres	Sucres	Sucres
Investments:			
Investment in road and equipment—			
Prior to January 1, 1916—			
Road	51,470,890		
Equipment	927,083		
		52,397,973	
Subsequent to January 1, 1916—			
Road	106,766		
Equipment	52,669		
		159,435	
Sinking funds—			
Prior-lien 6 per cent bonds ($533,000)	1,092,650		
First-mortgage 5 per cent bonds ($76,000)	155,800		
Cash		105	
Miscellaneous physical property		22,659	
Other investments—Notes		5,000	
			52,585,172
Current assets:			
Cash—			
New York	50,396		
London	26,403		
Guayaquil and Quito	44,705		
In transit	239,476		
		360,980	
Special deposits		21,254	
Net balances receivable from agents and conductors		25,969	
Miscellaneous accounts receivable		25,961	
Material and supplies		632,406	
Notes receivable		1,837	
Interest and rents receivable		118	
			1,068,525
Deferred assets:			
Due from Government of Ecuador account of unpaid interest, sinking fund, and commissions		10,801,914	
Due from Government of Ecuador account of old unpaid bills, etc		807,774	
Sundry items		5,889	
			11,615,577
Unadjusted debits			54,403
Corporate loss:			
Additions to property through income and surplus (Cr.)		162,145	
Sinking-fund reserves (Cr.)		1,248,555	
Miscellaneous-fund reserves (Cr.)		205,000	
Profit and loss, debt balance		12,162,332	
			10,546,632
Total			75,870,309

LIABILITIES

	Sucres	Sucres
Capital stock:		
Preferred stock ($5,250,000)	10,762,500	
Common stock—		
Class A ($3,445,680)	7,063,644	
Class B ($3,586,320)	7,351,956	
Class C ($1,000)	2,050	
		25,180,150

	Sucres	Sucres	Sucres
Long-term debt:			
Funded debt unmatured—			
Prior-lien 6 per cent bonds ($2,486,000)	5, 096, 300		
Less held in sinking fund ($533,000)	1, 092, 650		
Outstanding		4, 003, 650	
First-mortgage 5 per cent bonds ($10,808,000)	22, 156, 400		
Less held sinking fund ($76,000)	155, 800		
Outstanding		22, 000, 600	
			26, 004, 250
Current liabilities:			
Audited accounts and wages payable		95, 671	
Miscellaneous accounts payable		5, 572	
Interest matured unpaid		11, 576, 249	
Unmatured interest accrued		881, 285	
Other current liabilities		124, 575	
			12, 683, 352
Deferred liabilities:			
Liability of Government of Ecuador for unpaid interest, sinking fund, and commissions		10, 801, 913	
Other deferred liabilities		52, 351	
			10, 854, 264
Unadjusted credits:			
Tax liability		4, 582	
Insurance and casualty reserves		472, 157	
Accrued depreciation—			
Road		191	
Equipment		658, 124	
Other unadjusted credits		13, 239	
			1, 148, 293
Total			75, 870, 309

The condensed general balance sheet as of December 31, 1923, is shown below:

ASSETS

	Sucres	Sucres	Sucres
Investments:			
Investment in road and equipment—			
Prior to January 1, 1916—			
Road	51, 385, 931		
Equipment	927, 083		
		52, 313, 014	
Subsequent to January 1, 1916—			
Road	387, 412		
Equipment	531, 117		
		918, 529	
Sinking funds—			
Prior-lien 6 per cent bonds ($1,508,000)	3, 091, 400		
First-mortgage 5 per cent bonds ($76,000)	155, 800		
Cash		166, 270	
Miscellaneous physical property		13, 813	
Other investments: Notes		3, 000	
			53, 414, 626

Current assets:			
Cash:	Sucres		
New York	74, 436		
London	10, 043		
Guayaquil and Quito	113, 728		
In transit	200, 638	Sucres	
		398, 845	
Special deposits		8, 067	
Net balances receivable from agents and conductors		14, 927	
Miscellaneous accounts receivable		78, 889	
Materials and supplies		1, 066, 780	
Interest and rents receivable		302	Sucres
			1, 567, 810
Deferred assets:			
Due from Government of Ecuador account of unpaid interest, sinking fund, and commissions		16, 384, 562	
Due from Government of Ecuador account of old unpaid bills, etc		807, 774	
Sundry items		914	
			17, 193, 250
Unadjusted debits			186, 143
Corporate loss:			
Additions to property through income and surplus (Cr.)		926, 412	
Sinking-fund reserves (Cr.)		3, 413, 470	
Profit and loss, debit balance (Dr.)		14, 544, 113	
			10, 204, 231
Total			82, 566, 606

LIABILITIES

Capital stock:		Sucres	
Preferred stock ($5,250,000)		10, 762, 500	
Common stock—			
Class A ($3,445,680)		7, 063, 644	
Class B ($3,586,320)		7, 351, 956	
Class C ($1,000)		2, 050	Sucres
			25, 180, 150
Long-term debt:			
Funded debt unmatured—			
Prior lien 6 per cent bonds ($2,486,000)	Sucres 5, 096, 300		
Less held in sinking fund ($1,508,000)	3, 091, 400		
Outstanding ($978,000)	2, 004, 900	2, 004, 900	
First-mortgage 5 per cent bonds ($10,808,000)	22, 156, 400		
Less held in sinking fund ($76,000)	155, 800		
Outstanding ($10,732,000)	22, 000, 600	22, 000, 600	
Notes payable			63, 900
Current liabilities:			
Audited accounts and wages payable		129, 149	
Interest matured unpaid		15, 338, 910	
Unmatured interest accrued		881, 285	
Other current liabilities		166, 791	
			16, 516, 135
Deferred liabilities:			
Liability of Government of Ecuador for unpaid interest, sinking fund, and commissions		16, 384, 562	
Other deferred liabilities		104, 245	
			16, 488, 807

Unadjusted credits:	Sucres	
Tax liability	9, 501	
Miscellaneous reserves	22, 412	
Other unadjusted credits	279, 655	Sucres 311, 568
Total		82, 566, 060

Following is the income statement for the year ended December 31, 1919:

Railway operating revenues	$2, 578, 322
Railway operating expenses	2, 403, 867
Revenue from railway operations	174, 455
Railway tax accruals	8, 291
Balance of operating income	166, 164
Add nonoperating income:	
Miscellaneous rent income	1, 737
Miscellaneous nonoperating physical property	700
Income from unfunded securities and accounts	2, 790
Total nonoperating income	5, 227
Gross income	171, 391
Less:	
Investments in physical property	73, 975
Rent for floating equipment	2, 000
Interest on unfunded debt	327
Total investments in physical property, etc	76, 302
Net income available for interest on funded debt and other obligations	95, 089
Deductions from available income:	
Interest on funded debt	1, 340, 249
Commissions on funded debt	17, 626
Sinking funds	481, 961
Total deductions from available income	1, 839, 836
Balance of income transferred to profit and loss	1, 744, 747

The income statement for the year ended December 31, 1923, is shown below:

	Sucres
Railway operating revenues	4, 130, 448
Railway operating expenses	3, 829, 449
Revenue from railway operations	300, 999
Railway tax accruals	18, 059
Balance of operating income	282, 940
Nonoperating income	5, 609
Gross income	288, 549
Less investments in physical property, rent of floating equipment, and interest on unfunded debt	7, 588
Income available for interest on funded debt and other obligations	280, 961
Total deductions from available income	1, 780, 195
Balance of income, transferred to profit and loss	1, 499, 234

	Sucres
Balance of income transferred to profit and loss, December, 1922	13, 074, 008
Net loss for year 1923	1, 499, 234
	14, 573, 242
Sundry adjustments, 1923 net credit	29, 129
Profit and loss (loss) at December 31, 1923	14, 544, 113

Following is a statement of the railway operating revenues and expenses for 1919:

RAILWAY OPERATING REVENUES

Transportation:	
Freight	$1, 601, 201
Passenger	685, 098
Mail	6, 078
Express	137, 768
Switching	50
Special-service train	37, 376
Water transfers—	
Freight	40, 795
Passenger	14, 264
Express	2, 763
Total	2, 525, 393
Incidental:	
Storage, freight	236
Telegraph and telephone	43, 728
Power	6, 887
Rents of buildings and other property	72
Insurance	2, 006
Total	52, 929
Grand total railway operating revenues	2, 578, 322

RAILWAY OPERATING EXPENSES

Maintenance of way and structures	501, 616
Maintenance and equipment	500, 711
Traffic	9, 333
Transportation, rail line	1, 128, 949
Miscellaneous operations	4, 930
General	258, 328
Total railway operating expenses	2. 403, 867

RECAPITULATION

Railway operating revenues	2, 578, 322
Railway operating expenses	2, 403, 866
Net revenue from railway operations	174, 456

Following is a similar statement for the year 1923:

RAILWAY OPERATING REVENUES

	Sucres
Transportation:	
Freight, including water transfers	2, 532, 389
Passenger, including water transfers and special trains and coaches	1, 224, 239
Mail	6, 776
Express	270, 174
Water transfers for other than passengers and freight	5, 990
Total	4, 039, 568

Incidental:	Sucres
Storage, freight	742
Telegraph and telephone	68, 725
Power	9, 452
Rents of buildings and other property	97
Miscellaneous	11, 864
Total	90, 880
Grand total railway operating revenues	4, 130, 448

RAILWAY OPERATING EXPENSES

Maintenance of way and structures	738, 192
Maintenance of equipment	599, 044
Traffic	15, 983
Transportation rail lines	2, 057, 851
Miscellaneous operations	10, 589
General	407, 790
Total railway operating expenses	3, 829, 449

RECAPITULATION

Railway operating revenues	4, 130, 448
Railway operating expenses	3, 829, 449
Net revenues from railway operations	300, 999

TRAFFIC STATISTICS

The following tables show the amount of traffic over the road for the calendar years noted on each table:

Items	1918	1919	Increase or decrease		1922	1923	Increase	
			Number	Per cent			Number	Per cent
Gross tons of revenue freight moved	79, 414	85, 227	+5, 813	+7. 32	106, 316	126, 857	20, 541	19. 32
Revenue tons moved 1 mile	9, 238, 138	10, 176, 403	+938, 265	+10. 16	12, 307, 492	14, 154, 831	1, 847, 339	15. 01
Total number of revenue passengers carried	196, 866	192, 358	−4, 508	−2. 29	218, 436	252, 653	34, 217	15. 67
Revenue passengers carried 1 mile	8, 828, 806	8, 843, 181	+14, 375	+. 16	11, 262, 829	12, 204, 713	941, 884	8. 36

In 1924 the railway carried 131,897 tons of freight and 266,416 passengers, while for 1925 the figures were 112,116 and 268,069, respectively.

A detailed statement of the freight carried over the road for the years from 1916 to 1923 is as follows:

Articles	1916	1917	1918	1919	1920	1921	1922	1923 [1]	Total
PRODUCTS OF AGRICULTURE	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Wheat	2, 039	1, 955	2, 529	1, 905	2, 256	3, 617	3, 061	2, 233	19, 595
Barley	889	787	822	921	1, 773	1, 621	2, 058	1, 394	10, 265
Corn	178	217	348	380	818	772	365	262	3, 340
Rice	3, 766	4, 597	5, 061	3, 807	4, 191	5, 806	4, 023	3, 991	35, 242
Oats	--------	--------	2	--------	3	6	10	1	22
Flour	3, 027	3, 793	3, 745	3, 259	3, 503	4, 058	4, 183	3, 466	29, 034
Hay	139	197	175	131	189	257	314	281	1, 683
Tobacco	--------	--------	132	185	176	216	189	168	1, 063
Cotton	--------	--------	285	327	596	894	586	779	3, 467
Bananas	2, 209	2, 801	5, 031	5, 398	5, 689	4, 728	5, 474	5, 286	36, 616
Other fruits	937	586	831	2, 157	2, 128	3, 060	2, 520	1, 467	13, 686
Coffee	116	268	206	171	205	542	174	170	1, 852
Cocoa	1, 263	691	658	456	860	1, 078	1, 061	459	6, 526
Ivory nuts	--------	--------	--------	--------	59	--------	--------	1	60
Potatoes	14, 483	14, 087	10, 658	11, 956	14, 353	12, 995	16, 709	12, 662	107, 903
Other articles	6, 366	7, 055	7, 173	8, 164	8, 176	7, 599	9, 503	7, 071	61, 110
Total	35, 412	37, 034	37, 656	39, 217	44, 975	47, 249	50, 230	39, 691	331, 464

[1] The figures for 1923 include only the first nine months.

Articles	1916	1917	1918	1919	1920	1921	1922	1923	Total
PRODUCTS OF ANIMALS	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Horses and mules	489	346	231	233	197	243	325	177	2,241
Cattle	6,002	8,079	5,545	6,639	8,669	6,875	5,888	4,996	52,693
Hogs	1,093	802	548	599	940	1,325	1,367	885	7,559
Sheep and goats	843	2,119	99	126	239	79	218	36	3,759
Dressed meats	48	83	125	91	149	134	136	86	852
Lard	232	265	268	211	207	270	277	191	1,921
Chickens and turkeys			67	53	119	128	115	104	586
Fish			84	94	104	98	110	97	587
Wool			1,616	524	219	179	152	219	2,909
Hides and leather	553	786	552	715	451	594	419	341	4,411
Other articles			66	37	54	274	386	377	1,194
Total	9,260	12,480	9,201	9,322	11,348	10,199	9,393	7,509	78,712
PRODUCTS OF MINES									
Coal	59	40	57	44	16	17	34	17	284
Ores	540	378	1			29	74	2	1,024
Stone and sand	566	175	1,026	349	902	3,260	1,377	2,612	10,267
Salt	5,895	6,102	6,703	6,406	6,315	7,519	4,340	5,046	48,326
Other articles			241	83	173	187	174	288	1,146
Total	7,060	6,695	8,028	6,882	7,406	11,012	5,999	7,965	61,047
PRODUCTS OF FORESTS									
Lumber and logs	494	564	708	731	1,017	961	1,097	1,384	6,956
Wood	482	479	575	669	464	1,293	901	151	5,014
Charcoal	403	668	1,007	1,175	1,445	1,487	1,300	1,107	8,592
Bamboo			107	97	19	388	171	189	971
Rubber	1	5	3	7	2		1	3	22
Ties	845	1,669	733	693	703	1,159	1,476	1,462	8,740
Othert articles			56	29	175	192	190	147	789
Total	2,225	3,385	3,189	3,401	3,825	5,480	5,136	4,443	31,084
MANUFACTURES									
Gasoline and kerosene	526	599	765	1,053	1,234	1,141	1,190	1,021	7,529
Sugar	7,656	8,260	6,623	8,004	8,063	8,825	9,065	7,049	63,545
Cotton, wool, and silk	1,173	923	345	682	735	718	722	690	5,988
Clothing and shoes	459	495	274	302	359	308	403	290	2,890
Iron and steel rails			17	251	304	1,084	1,118	188	2,962
Bar and sheet metal			242	315	254	468	182	155	1,616
Castings and machinery	294	644	389	1,116	1,212	972	1,368	1,288	7,283
Cement, brick, and lime	1,296	1,741	1,918	2,575	3,051	5,255	5,225	3,693	24,754
Wines, liquors, and beer	1,534	1,820	2,093	1,875	2,509	2,538	1,911	1,817	16,097
Household furniture	573	604	730	809	850	1,143	938	892	6,539
Other articles	4,461	6,042	5,066	5,724	6,467	8,890	8,018	10,643	55,311
Total	17,972	21,128	18,462	22,706	25,038	31,342	30,140	27,726	194,514
MISCELLANEOUS									
Canned goods	126	160	165	206	221	134	170	110	1,292
Milk, butter, and cheese	515	857	1,370	1,574	1,712	1,772	1,899	1,578	11,277
Eggs	303	381	421	438	560	663	666	540	3,972
Other articles	711	519	921	1,211	879	1,052	1,375	919	7,587
Total	1,655	1,917	2,877	3,429	3,372	3,621	4,110	3,147	24,128
SUMMARY									
Products of agriculture	35,412	37,034	37,656	39,217	44,975	47,249	50,230	39,691	331,464
Products of animals	9,260	12,480	9,201	9,322	11,348	10,199	9,393	7,509	78,712
Products of mines	7,060	6,695	8,028	6,882	7,406	11,012	5,999	7,965	61,047
Products of forests	2,225	3,385	3,189	3,401	3,825	5,480	5,136	4,443	31,084
Manufactures	17,972	21,128	18,462	22,706	25,038	31,342	30,140	27,726	194,514
Miscellaneous	1,655	1,917	2,877	3,429	3,372	3,621	4,110	3,147	24,128
Grand total	73,584	82,639	79,413	84,957	95,964	108,903	105,008	90,481	720,949

RIGHT OF WAY

Altitude.—The road runs from 12 feet above sea level to an altitude of 11,841 feet at Urbana, the highest point on the road.

Gauge.—The gauge of the road is 42 inches throughout.

Grades.—The maximum grade on the road is 5½ per cent compensated. This grade occurs in the mountain division between Bucay and Guamote and is almost continuous for 50 miles. Outside of this division the maximum grade is one of 4 per cent. There is one switchback where a raise of 300 feet is made in less than half a kilometer.

Curves.—The radius of the maximum curve on the road is 197 feet.

Ballast.—Gravel, crushed rock, cinders, and dirt are used as ballast. Good gravel pits exist about 35 miles south of Quito, and from these the greater part of the material for ballast is drawn.

Ties.—California redwood and native guayacan, madera negra, and matazona ties, spaced 2 feet on centers, are used. These ties are 6 by 8 inches by 6 feet 4 inches. All ties are bored prior to spiking. On curves, tie plates are used on the redwood ties.

Rails.—Rails weighing 55 pounds have formerly been in use on the road. At the present time they are being replaced with 70-pound A. S. C. E. rails, 30 feet in length, which will be used throughout in the future. Switches and frogs are of the same section.

Angle bars.—Angle bars are of the continuous type to fit A. S. C. E. section of rail, using four bolts with lock nuts.

Bolts.—Bolts used are ¾ to 3½ inches, oval shank, button head, both hexagonal and square nuts.

Spikes.—Spikes are 9/16 by 5½ inches.

Washers.—Washers used are split lock nut.

Switch stands.—High stands are used on the main line, and ground throw in yards.

Rail braces.—Two styles of rail braces are used. One is stamped out and the other molded.

Alignment.—The alignment has 60 feet between reverse curves, 5½ per cent maximum grade, and 29-degree curves on the American system. Engines are turned by passing around wyes. The line is divided into 46 sections of 10 kilometers each, the maintenance of each being served by one gang of 10 men.

Water.—Water stations are located so that an engine tank with a capacity of 3,000 gallons will have ample margin of safety. The water supply is stored in steel-plate tanks, timber boxes, and masonry tanks built in the ground, ranging from 8,000 to 50,000 gallons capacity, as requirements demand. The supply is taken from water mains and near-by streams, depending upon the location.

Fuel.—Coal, wood, and oil are used as fuel. Coal and oil are imported, while wood is cut from the local forests. Fuel stations are located from 20 to 50 miles apart. At the present time electrification is not being considered. At the port terminal (Alfaro) there is a 300,000-gallon concrete reservoir for the reception of crude oil for fuel. This reservoir is set on a hillside to facilitate a gravity flow for individual tanks in the shops and wharves; also for filling the tank cars for transporting oil to the second division. This tank is set flush with the ground and has a zinc roof.

Signaling equipment.—There is no signaling equipment in use on the road.

Clearance.—Clearance on the road is limited to 16 feet 6 inches from top of rail to top of tunnels, which are 12 feet in width. The stations have 5 feet clearance. Loading is limited to freight 8 feet wide, 8 feet high, 30 feet long, and weighing 40,000 pounds. This freight must be loaded on a single car, as the height and width of tunnels and cuts will not permit cars to be double or triple loaded.

Maintenance.—In the plateau district, where climatic conditions are always more or less favorable, the line is always in good shape. In the section where the road climbs 10,000 feet in 50 miles and also in the coast regions, which are subject to severe rains during January, February, March, and April, it is extremely difficult to maintain the track in first-class shape during those months.

Bridges.—There are 72 bridges on the road. They are of the through-truss, deck-truss, both pin-connected and through-riveted girders and both through and deck type steel-riveted plate, also a few short openings of I beam construction. Other small openings are timber stringers. Small bridges on low line or coast division are of 90-pound rail, nested, on account of low clearance space. All steel bridges are on masonry or concrete abutments or foundations. All bridges are decked with Oregon fir ties, 8 by 8 by 8, 8 by 8 by 10, 9 by 12 by 10, 9 by 12 by 14, 12 by 12 by 10, and 12 by 12 by 14. Guard rails are 6 by 8 bolted or spiked. The bridges are painted with black graphite, red oxide, and other makes of bridge paint. A mixture of coal tar, cement, and kerosene is also used. Bridges are of Pennsylvania and American Bridge Co. manufacture.

Stations.—Station buildings are of timber, brick, and stone, having zinc roofs.

Tunnels.—There are three tunnels on the road, all of which are located between Huigra and Sibambe. One, 163 feet long, is cut through solid rock; one, 263 feet long, is cut through gravel; and the other, 69 feet long, is cut through solid rock. The minimum clearance of the tunnels is 13 feet in width and 16½ feet from top of rail.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in use on the road for the calendar year ended December 31, 1923, are shown below. The locomotives are:

Type	Number	Wheel arrangement	Total weight	Size of cylinder
			Tons	
Consolidation (superheated)	11	2-8-0	80	Three—19 by 22 inches. Eight—13½ by 22 inches, double cylinders.
Mogul	[1] 8	2-6-0	50	17 by 22 inches.
Total	19			

Including 1 switch locomotive.

The moguls are all in service between Duran and Bucay. The cars are as follows:

Cars in passenger service:	
Special coach	1
Passenger coaches—	
First class	6
Second class	7
Combination, first and second	1
Mail and baggage cars	4
Chair and compartment coaches	3
Kitchen car	1
Total	23
Cars in freight service:	
Flat cars	13
Coal cars (wooden gondolas)	4
Yard dump cars	3
Stock cars	30
Box cars	93
Total	143
Miscellaneous equipment:	
Ballast cars	10
Derrick car	1
Tool car	1
Ditcher	1
Oil tank cars	3
Wood-carrying cars	5
Pay car	1
Track motor cars	2
Total	24
Floating equipment:	
Oil barge	1
Ferryboat	1
Tugboats	3
Steel lighters	4
Total	9
Total equipment (including locomotives)	218

Standard automatic couplers are used, the center of the knuckle being 29½ inches above the top of the rail.

REPAIR SHOPS

Repair shops on the main line are located at Duran, where there are a shop and a foundry. Engines are completely overhauled and all classes of cars are built and overhauled. Running repairs are made in the small shops at Bucary and Ambato. The shop at Duran employs approximately 230 men, and the small shops 12 men each. No attempt is made to build heavier castings than brake shoes, center plates, etc. Generally two or three engines are in the shops at all times for overhauling, and, in addition, as many cars as need attention.

The technical equipment used in the shops is selected on recommendation of the superintendent of motive power, approved by the general manager, and purchased, as previously stated, through the New York office of the company.

CENTRAL RAILWAY OF ECUADOR (LTD.)

(MANTA-SANTA ANA RAILWAY)

The concession for the Central Railway of Ecuador was granted by the Ecuadorian Government to M. P. Gozenbach, one of the directors of the Central Railway of Ecuador (Ltd.), on November 10, 1909, for a period of 75 years. This company was registered in London August 2, 1910, with an authorized capital of £100,000, in shares of £1 each. Under the concession the company was also to construct a mole at Manta, and at the expiration of the 75-year period, in 1984, the railway, pier, etc., were to revert to the Government gratuitously.

The line from Manta to Santa Ana, 60 kilometers in length, was to be constructed in two years, but in May, 1913, it had been completed only to Porto Viejo, when all construction ceased. In 1916 work was resumed, but lagged after a short time, and it was not until 1920 that traffic to Santa Ana was established.

In 1914 a contract for the extension of the Manta wharf 200 feet and for the extension of the Manta-Santa Ana Railway via Tipijapa to Pajan, a distance of 70 kilometers or beyond, was signed with M. P. Gozenbach, of the Central Railway. Under its terms the gauge was to be 0.75 meter; rails not less than 36 pounds to the yard; ties of hardwood, hewn on two sides, and not less than 30 to the rail of 62 feet. Bridges, viaducts, and drains were to be constructed of iron, steel, or masonry. Rolling stock was to be approved by the Government and provided with Westinghouse air brakes. Telegraph or telephone lines were to be erected and repair shops and water tanks provided. The mole at Manta was to be 1,175 feet in length, constructed of reinforced concrete, covered with 3-inch plank hardwood. A double railway track, a steam crane of 3-ton capacity, a metallic building, cables, chains, etc., were to be provided for the mole. Construction work on the railway extension and mole was to begin within six months and to be finished within three years from the date of the contract. These plans, however, did not materialize, as work was not started on the extension to Pajan until the early part of 1919. Even then, because of lack of funds, very little was done and the work finally halted. The line is now awaiting capital for its completion. No work has as yet been done on the mole.

Connections will eventually be made at Porto Viejo with the projected branch of the Bahia de Caraquez-Chone line from Calceta. The latter line will construct a branch toward Porto Viejo, and, in view of possible connections, the proposed line leading from Porto Viejo will have the same gauge, weight, and shape of rails as the branch from Calceta. In 1923 the Ecuadorian Government acquired control of this line and is now operating it.

From the time of the opening of the line to Porto Viejo and until the last few years this railroad was managed at a loss. Under its present management, however, it is now yielding a fair profit. As evidence of this the railroad company paid its debt to the Ecuadorian Government, amounting to 194,593 sucres, but no statements of earnings have been made public for some years. The Government guaranty of £7,000 per annum has not been paid to December, 1924. The funded obligations of the road as issued in 1914 and 1916 are as follows:

One hundred and twenty-seven thousand five hundred pounds 6 per cent guaranteed prior-lien bonds to bearer, of £20, issued as collateral security to the contractors; £100,000 of this was first authorized in January, 1914, being increased to £127,500 in December, 1916, when it was also decided to postpone the operation of the sinking fund until May 1, 1925, so that the bonds will be redeemed within a period of 33 years calculated from May 1, 1925, instead of May 1, 1915—releasing the company from any liability to set aside any sum to such sinking fund in respect of the years 1915 to 1924, both inclusive, and providing that the total number of prior-lien bonds to be redeemed in respect of the years 1925 to 1957, both inclusive, be increased to £6,375.

Forty-two thousand five hundred pounds 6 per cent income bonds to bearer of £20 each (total authorized) issued in 1916, in satisfaction of then existing 6 per cent first-mortgage bonds (with all matured and unmatured coupons) at the rate of one new for every four old. The bonds are to be redeemed on or before June 30, 1950, but the company is entitled to redeem all or any of the bonds at par at any time on giving three months' notice. No interest has ever been paid.

In July, 1923, the following arrangement was approved:

(*a*) One hundred thousand pounds 6 per cent first-debenture stock to be issued in exchange for £127,500 6 per cent prior lien bonds, outstanding accrued interest on latter (none ever paid) to be canceled.

(*b*) Six per cent income stock for £200,000 to be created, and £85,000 to be issued in exchange for £42,500 6 per cent (noncumulative) income bonds outstanding (£40 stock for each £20 bond).

According to the Stock Exchange Yearbook for 1925, the capital now consists of:

One hundred thousand pounds shares of £1, all except seven issued fully paid. Authorized, £100,000.

One hundred thousand pounds 6 per cent first-debenture stock. Authorized, £100,000. Interest May 1 and November 1. (None paid to December, 1924.) Repayable at par by 1958 by drawings annually, commencing 1928. Secured by trust deed as first specific charge on concession, railway, and mole (when built), and as first floating charge on undertaking and property.

Two hundred thousand pounds 6 per cent (participating) income stock, including £85,000 issued under arrangement described above and £100,000 to Government of Ecuador in December, 1923, in connection with arrangement for settlement of questions relating to guaranty, etc. Authorized, £200,000. Interest, January 1 and July 1 (beginning January 1, 1924, but none yet paid), only out of net profits of preceding half year, and noncumulative; further participation one-half of net profits remaining after 5 per cent in any year on shares payable on next half-yearly interest date after declaration of such dividend. Repayable at par in event of winding up, or at any time on three months' notice from company. Secured by trust deed as floating charge on undertaking and property, subject to first-debenture stock.

The principal business of the line is in transporting coffee, cacao, "Panama" hats, and ivory nuts for shipment to the port of Manta. The traffic generally, however, is very light, and no statistics were kept until very recently, so that none are available at this time. The railroad carries both freight and passengers.

The total length of the line in operation on June 30, 1925, was 67 kilometers, to which, however, must be added yardage and sidings, of the same guage, amounting to 2,640 feet. The entire mileage is single track.

Purchases for the road are indicated by W. J. C. Scrutton, manager, Manta, Ecuador—generally through the London office, 130 Dashwood House, E. C. 2.

Gauge.—The gauge of the line is 75 centimeters.

Grades.—The maximum grade on the road is 3 per cent.

Curves.—The radius of the minimum curve is 60 meters.

Ties.—The ties are of lignum-vitæ, carob, and other woods.

Rails.—Rails weighing 35 pounds to the yard are used.

Fuel.—Wood secured locally is used as fuel. Fuel stations are approximately 18 kilometers apart.

Signaling equipment.—No signaling equipment is used.

Clearance.—The clearance is 1 foot 6 inches at stations; there are no tunnels.

Maintenance.—In 1920 the line was reported in poor condition, but since the Ecuadorian Government has secured control it has improved materially.

Bridges.—There are two bridges of 9 and 18 meters, respectively. These bridges are constructed of rails.

Tunnels.—There are no tunnels on the road.

On June 30, 1925, the company owned 3 locomotives (weight on drivers from 30,000 to 40,000 pounds, cylinders from 12 to 14 inches), 14 freight cars (of which 1 is a box car, 11 are flat cars, and 2 are tank cars), and 2 passenger cars. All equipment is of American manufacture.

The shop facilities are able to meet the needs of the line.

BAHIA-QUITO RAILWAY

(COMPAGNIE FRANÇAISE DE CHEMINS DE FER DE L'EQUATEUR)

The history of this road dates back to October 29, 1902, when a concession for its construction, valid for 99 years, was granted to Mr. Catefort. He transferred his concession to the Compañía Francesa del Ferrocarril de Bahia-Quito, which was registered in Paris, care of B. Descoutures, 10 Rue Theodore de Banville. Later it was retransferred to the Compagnie Française de Chemins de Fer de l'Equateur, which was registered March 17, 1909, in Paris. The original concession was for the construction of a road from Bahia to Chone. This has been added to, however, so that the company now has the right to construct several branches, the chief one of which is to Quito.

In June, 1909, the company offered through the Banque Commerciale et Industrielle, of Paris, 7,000,000 franc bonds at 84½. The bonds bore interest at the rate of 5 per cent per annum and were to have been redeemed by a sinking fund of one-half of 1 per cent per annum. They were secured by a portion of the customs receipts of the Province of Manabi, and the Government of Ecuador proposed to guarantee 6 per cent on the cost of construction up to 25,000,000 francs, in so far as the net receipts of the line are not sufficient to provide such a return as each section costing at least 200,000 francs is open for traffic. These bonds are reported as still outstanding.

Seven years were allowed in which to construct the line, but this period was extended in April, 1908, the concession being for a period of 99 years, after which the line was to revert to the Government without payment.

The road was opened to traffic from Caraquez to Calceta, a distance of 55 kilometers, in February, 1911, and extended to Chone, a total distance of 78 kilometers, the following year. During 1913 construction was stopped.

On February 24, 1910, the company was granted a concession for the construction of a branch line extending from Balzar to Guayaquil. This concession included a grant of 200,000 hectares of land. In addition it is proposed to construct a branch from Calceta through Junin to Porto Viejo, where it will connect with the line running to Manta.

A legislative decree granted October 8, 1916, ordered the construction of another branch from Chone to Quito via Ricuarte and San Domingo de los Colorados. This road will connect Quito with the ports of Manta and Bahia de Caraquez on the central coast of Ecuador, and a part of the import and export duties collected at these ports will be used for the construction of the road. No construction has been undertaken on this branch up to the present time.

In 1918 various sections of the line were washed out by the heavy rains. In 1920 Señor Bernardo Plaza G. was named "interventor" (superintendent) and began general repairs on the line. Repairs have been made as far as kilometer 55, where all progress is held up by reason of insufficient funds.

Railway experts have recommended that the gauge of the line be changed from 0.75 meter to not less than 1 meter, and that the route be extended to Quito in a straight line so far as the topography of the country will permit. This will shorten the distance and decrease the cost of construction.

The aim of this railway system is to open up the western section of the country, which comprises about one-third of the total area. This section is very fertile and highly productive of coffee, sugar, rubber, etc., and the object of the line is to build up an export business in these commodities. This line reduces the rail distance from tidewater to the capital city to about 200 miles at the present time.

The operating officials are Bernardo Plaza G., interventor del Ferrocarril Bahia-Quito, Bahia, Ecuador, and Antonio E. Moya R., chief machinist, Guayaquil, Ecuador.

Purchases are made by the "interventor," who should be addressed as shown above. Purchases for the shops are made by Gonzalez Hermanos, Guayaquil, Ecuador.

In 1924, 5,215 tons of cargo and 3,578 passengers were moved. Total revenues were 56,040 sucres, as against 63,810 for 1914. However, in 1914 the line went as far as Chone, 78 kilometers, whereas now it only reaches Calceta, 55 kilometers. The fare for this distance is 4 sucres, less than 10 centavos ($0.02) per kilometer. The freight rate is 40 centavos ($0.08) per 100 pounds. A new tariff is being studied.

Altitude.—The highest point of the road is 150 feet.

Grades.—Grades are of 1, 2, 3, and 4½ per cent.

Curves.—The radius of the maximum curve is 150 feet.

Ballast.—Crushed rock is used for ballast on a part of the line.

Ties.—Ties of guayacan, secured locally, 1.5 meters in length and spaced 13 ties to the rail on straightaways and 15 on curves.

Rails.—Rails manufactured in the United States, 28 pounds to the yard and 30 feet in length, are used.

Water.—Water secured from the river is used. Water stations are located at Bahia, kilometers 33, 43, 55, and 78. All tanks are of square type and of steel construction.

Fuel.—Wood is used for fuel. At the present time no plans are being made to change the fuel.

Signaling equipment.—French type of signal equipment is used.

Loading and clearance.—Clearances of the road are not known, but the freight cars can carry from 7 to 10 tons.

Bridges—There are 10 bridges, the longest of which is 50 meters and the shortest 5 meters in length. They are of Belgian and German material and located at Bahia, kilometers 38, 40, 45, 55, 56, 59, 60, 63, 65, and 75.

Tunnels.—There are no tunnels on the road.

At the close of the fiscal year ended June 30, 1925, the road had three locomotives, two of which were in use and one of which was stored because it was too heavy to use on the line. One of the locomotives is four-wheeled, with cylinders 10 by 16 inches and weighing 18 tons, while the other is four-wheeled, weighing 30 tons; the one that is stored weighs 45 tons. The locomotives are old and badly in need of repair.

Four passenger and 12 freight cars are owned by the road. Of the latter only six are available. Freight cars are of Belgian manufacture, while the passenger cars are of French and American types.

There is one repair shop, located at Bahia. In this shop bronze castings up to 150 pounds can be made.

The shop employs from 10 to 30 persons. Some of the machinery is power-driven. All purchases for the shop are made through Gonzales Bros., Guayaquil.

GUAYAQUIL-TO-SALINAS RAILWAY

(FERROCARRIL A LA COSTA)

The history of the Guayaquil-to-Salinas Railway dates from a legislative decree in 1909, empowering the council of Guayaquil to name a junta for the construction of a highway from Guayaquil to Salinas. In 1912, however, with an American engineer in charge, the junta, with offices in Guayaquil, decided to build a railroad instead of a highway. The railroad, when completed, will extend from Guayaquil to Salinas (on the coast) and will run via Amen, a distance of 150 kilometers. A branch line is to be constructed from the latter city to Playas, which is also on the coast but to the south of Amen. All of the roadbed, so far as earthworks are concerned, has been completed and used as a motor road for several years, it being the only passable road for motor vehicles between Guayaquil and the coast.

Work on track construction from Guayaquil was begun on August 15, 1922, and it is expected that this work will be completed and the road in operation some time in 1926.

The road, when finished, will serve a most useful purpose if a satisfactory harbor and wharf is established at Salinas, which can be made one of the best ports on the Pacific coast. Guayaquil's steamer service and communication with the outside world will be greatly improved. The bulk of freight can still come up the river, but packages, mail, baggage, and passengers would land at Salinas and come by rail to Guayaquil.

As an argument against this line it has been contended that it will not be successful on account of the aridity of the country through which it passes. The most important product of the peninsula is oil which comes from the region of Salinas and is sent by tanker to Guayaquil. It is doubtful whether the railroad will be able to compete with water transportation for this product.

This is owned and is being constructed by the municipality of Guayaquil under the direct supervision of the junta.

Purchases are made by the Junta del Ferrocarril a la Costa, the president of which is Señor J. Burbono Aguirre, located at Guayaquil. For the most part purchases are being made in Germany, although some tools and machinery were purchased in this country.

Altitude.—The road runs from 1 meter to 132 meters above sea level.

Gauge.—The gauge of the road is 1.435 meters.

Grade.—The maximum grade of the road is 2 per cent.

Curves.—The radius of the maximum curve on the road is 1.720 meters.

Ballast.—Gravel is used for ballast.

Ties.—Ties of guayacan secured locally in the hills, 6 by 8 inches by 8 feet, are used. These are spaced from 1 to 2 feet apart.

Rails.—A.S.C.E. rails, weighing 60 pounds to the yard and of 30 and 33 feet lengths, are used.

Water.—Water is obtained from a spring at kilometer 13 and from a well at kilometer 50. Circular tanks with a capacity of 50,000 liters are used. City water is used in Guayaquil, kilometer 1.

Fuel.—Both oil and wood are used as fuel. At the present time there is only one fuel station, located at Guayaquil. There are no plans for changing the fuel.

Signal equipment.—There is no signal equipment in use.

Maintenance.—That section of the roadbed which has been finished is in very good condition and when the line is completed should be able to bear heavy traffic.

Bridges.—There are 10 bridges, varying in length from 10 to 100 meters, located between Guayaquil and kilometer 40. These bridges are constructed of mangle.

Tunnels.—There are no tunnels on the road.

For the fiscal year ended June 30, 1925, the road had four locomotives and four passenger cars in operation. Three of the locomotives have three drivers on the side, while one has two drivers on the side. The locomotives are of 23, 40, 100, and 112 tons in weight and of 12, 16, 18, and 21 inch cylinders. Of the passenger cars, two are first class and two second class. No freight cars are yet in use. The cars are of German manufacture, with American couplers.

At the present time the road has no repair shops in operation.

EL ORO RAILWAY

The history of this road dates from 1903, when 26.5 kilometers of single track, in addition to 1½ kilometers of siding and yardage, were laid between Puerto Bolivar and Pasaje. In 1910, when war between Ecuador and Peru seemed imminent, the Guayaquil & Quito Railway, acting for the owners, changed the gauge of the road to 42 inches and turned over some of its rolling stock to it. At the present time the affairs of the railroad are controlled by the Junta de Obras Públicas de El Oro, Machala, Ecuador.

Inquiries with respect to sale of materials should be addressed to Manager Enrique Castro, Machala, Ecuador.

No financial information is available, but it is estimated that receipts are 40,000 sucres annually. The road is probably operated at a loss. It has been reported recently that the Government has contracted with the Southern Pacific Banana Corporation to take over the road and reconstruct it in exchange for the free carriage of bananas. The construction of an additional 4 miles into one of the banana plantations of the above company is proposed.

Gauge.—The gauge of the road is 42 inches.

Ties.—Ties of mangle wood are used.

Ballast.—The road is rock ballasted.

Rails.—Rails weighing 55 pounds to the yard, in 30-foot sections, are used.

Water.—Water is obtained from the Jubones River at Pasaje. Tank cars are used for hauling water from the river to points along the railroad where it is sold for domestic consumption.

Fuel.—Wood is used for fuel.

Clearance.—There are no clearance limits to the road.

Signaling equipment.—No signaling equipment is used.

For the fiscal year ended June 30, 1925, the road has four locomotives, only two of which were in commission. The locomotives weigh around 25 tons.

There are seven freight cars, one mixed first and second-class coach, one second-class coach, and one baggage car. Under existing conditions one train can haul about 10 tons of cargo.

There is one small workshop at Machala where light repairs are made.

QUITO-ESMERALDAS RAILWAY

The construction of the Quito-Esmeraldas Railway was first authorized in 1905, when a contract was signed between the Ecuadorian Government and Baron Boudourin Van Dedem, representing a French syndicate. The road was to start from a point on the coast of the Province of Esmeraldas and extend to Quito, passing through the Province of Imbabura. This is the most thickly populated and richest section of Ecuador. The gauge of the railroad was to be 42 inches. Work was to commence one year from the date of the contract and was to be completed in eight years. The capital invested in construction of the road, wharves, and docks was not to exceed 10,000,000 sucres. Following the completion of the road the Government was to pay 4 per cent interest on the capital invested for 30 years, and after 75 years of operation the road and all its dependencies were to become the property of the Government.

However, this project fell through, and in 1913, at a meeting of prominent citizens, resolutions were passed to petition the next Congress to authorize the President to enter into a new contract for the construction of this road.

Work commenced in 1916 under a contract with the firm of Orenstein-Koppel, of Berlin, Germany. This contract terminated August 19, 1920, when the work was taken over by a special board known as "Junta Central Directiva del Ferrocarril de Quito a Esmeraldas," which had charge of the construction work under the direction of J. A. Lonecok, an American engineer.

The railway is divided into two distinct sections—the Interandine, between Quito and Ibarra, about 107 miles, and the Ibarra-Pailon (San Lorenzo) section, about 124 miles. It was tentatively decided by the "junta" that the former should be of 42-inch gauge, with rails weighing 30 pounds to the yard, while the second section will be of 24-inch gauge and will operate steam locomotives. The difference in the gauge was due to the lack of funds, but it is planned to widen the gauge to 42 inches when the road is on a paying basis.

In 1924, on the Quito-to-Ibarra section, traffic was effected over a distance of 47 kilometers from Quito to the north and over a distance of 48 kilometers from Ibarra toward Quito. Active construction work, however, was not pushed until February 6, 1925, when the contract shown below authorizing the completion of the road was signed. At present work is progressing favorably, and the time stipulation of the contract should be adhered to. The contractors have already purchased some British locomotives.

This contract for the construction of the railway from Quito to San Lorenzo, in the Province of Esmeraldas, was signed in Quito on February 6, 1925, between Dr. I. Jaramillo Alvarado, Minister of the Interior, Public Works, etc., representing the Educadorian Government, and John Cleland Dobbie and Walter Charles Simmons, in their own rights, on the following terms:

First.—J. C. Dobbie and W. C. Simmons, who hereinafter shall be denominated "the contractors," obligate themselves to construct and complete the railway between Quito and San Lorenzo, Province of Esmeraldas, in accordance with the following stipulations:

Second.—The construction and completion of the railway shall be executed by the contractors in the following form and time: The contractors availing themselves of all works of construction and substructure already done by the Railway Board (Junta del Ferrocarril) between Quito and Ibarra, shall complete those that are lacking, in order that the railway may be complete, with all the superstructure material which they shall furnish for their account and shall leave it in service. The road shall be of the same gauge as that of the railway from Guayaquil to Quito. The contractors further obligate themselves in the same section: (*a*) To supply the rolling material equipment in accordance with the estimate and specifications attached; (*b*) to construct stations for the freight and passenger service, up to the value of 80,000 sucres (the type of stations and the places where they are to be constructed to be determined by agreement between the Government and the contractors), and to install tanks or spouts for the supplying of water and fuel; (*c*) to install a telegraph and telephone line for the service of the railway, with the necessary equipment for the interchange of telegraphic and telephonic despatches between the stations; (*d*) to construct a mechanical shop in Ibarra and another auxiliary one in Quito, equipped with all the necessary machinery and tools for the efficient care and repair of locomotives, cars, etc., at the terminals. (*e*) The contractors shall maintain for their account and free of all cost to the Government, all the roadway and other works that they construct, such as bridges, tunnels, drains, etc., during one year counted from the date on which they shall deliver the works completed and the railway in service. If it should be necessary to make over or repair the bridges, tunnels, and masonry work, such as culverts, drains, etc., executed for account of the "Junta" up to the date of signing the present contract, it shall be done by the contractors for account of the Government during the life of this contract. Respecting the bridges and other works of concrete or masonry referred to in the foregoing paragraph, the contractors agree that, before the line is placed in service and trains are operated over these constructions, every reasonable precaution shall be taken to test their stability and avoid contingencies—they to inform the Government of any repairs it may be necessary to effect.

Third.—The time limit for completing the works and obligations stipulated in the foregoing clause is 33 months, counted from the date the contract becomes effective. Should the termination of these works be hindered by reason of "force majeure," or fortuitous case, the time limit may be extended, by agreement with the Government, for a period equal to or double (or more) the time the hindrance shall last.

Fourth.—During the period of construction and until the acceptance of the line by the Government the contractors are authorized to transport passengers over any section of the line, collecting for such service in accordance with the rates to be fixed by agreement with the Government, and taking as a basis the nomenclature of the Guayaquil & Quito Railway. As soon as the line is finished as far as Cayambe the contractors obligate themselves to place at least one train weekly, in both directions, at the service of the public. They accept an equal obligation when the same service can be performed from Otavalo and Ibarra, until the whole work shall be delivered as far as Ibarra.

Fifth.—All the receipts, for both passengers and freight, telephones, etc., arising from the operation of the railway, in accordance with the stipulations of the foregoing cause, shall be administered by the contractors and shall be applied to cover the expenses of operation; the net profit, should there be any, shall be deposited in the bank acting as trustee, to increase the amortization funds of the debt. In no case shall the Government pay the deficit, should there be one.

Sixth.—The materials, employees, laborers, and other services of the contractors for the execution of all the works mentioned in this contract shall be freely mobilized, over all the line, during the life of this contract. The mails shall be transported free; armed troops and police shall pay half tariff. All other services, both private and of the Government, shall pay full tariff.

Seventh.—The contractors are exempted from the payment of customs duties, consular fees abroad, etc., for all the materials they import into the country and use in the carrying out of this contract. All the funds handled by the contractors in this undertaking, or the funds resulting from the operation of the railway up to the completion of the contract itself, shall likewise be exempt from all fiscal, municipal, or other taxes of whatever nature.

Eighth.—The Government shall turn over to the contractors the engineering instruments, rails, wheelbarrows, trucks, automobiles, chattels, and other material pertaining to the railway. The price of such material, chattels, etc., accepted by the contractors shall be in accordance with the inventory of the "junta" dated December 31, 1924, and shall be paid by the contractors through the intermediation of the fiduciary bank. The Government shall likewise allow the contractors free access to all the papers, plans, documents, books, and archives that are the property of the railway to date and necessary for their works and studies.

Ninth.—The expropriations of land for stations, sidings, or other appurtenances necessary for the railway, including the necessary water, etc., shall be made by the Government in accordance with the laws pertinent to the subject, the payment being for account of the contractors and only in the sections that they shall construct.

Tenth.—The Government shall proceed to receive the line between Quito and Ibarra as soon as the contractors notify it in writing that this is ready for definite service. A commission of two engineers, one to be designated by each party, shall make the studies and tests necessary to determine whether the technical conditions stipulated have been complied with, and shall report to the Government in writing respecting the matter—which report and tests shall be effected within a term of 90 days, and this time limit may not be extended. If the engineers designated for this purpose should not agree they shall submit the question to an arbitrator appointed by the Government and the contractors, and his decision given within a peremptory term of the 60 days next following, and in writing, shall be binding upon both parties. If, through any delay, the work should not be accepted by the Government before the expiration of the 90-day period and the adjusting arbitrator is not appointed, or if he does not render his decision within the following 60 days, the work shall be considered as completed in fact in conformity with the contract and accepted by the Government, without any claim against the contractors.

Eleventh.—San Lorenzo-Ibarra section: As there exists no plan of a definite line for the immediate construction of this section between the terminal points, the contractors obligate themselves to execute the studies, plans, location, and estimates, in conformity with the specifications determined for the purpose in inclosure No. 1, "Specifications," which shall form an integral part of the present contract. This preliminary work shall be executed by the contractors simultaneously with that of the construction of the railway between Quito and Ibarra, and they obligate themselves to complete it and deliver it to the Government within the two first years of the life of this contract. The studies necessary in connection with the port facilities at the Esmeraldas terminal (San Lorenzo) shall be the subject of an additional contract between the Government and the contractors.

Twelfth.—Once the studies and plans of location are approved, the contractors may present the project of definite construction by sections of not less than 50 kilometers. The estimates, as regards materials coming from abroad, shall show the difference in the prices and rates of exchange as compared with those that obtain in the market at the present time. All differences, both in the exchange and in the prices of materials with relation to the date of this contract shall be in benefit of or against the Government, as the case may be. It is understood that these differences shall be figured on the basis of 4 sucres 50 centavos per dollar and 20 sucres per pound sterling.

Thirteenth.—When once the plans and estimates prepared by the contractors shall have been submitted to the Government and approved by agreement with the Government, for the section San Lorenzo-Ibarra, the works shall be prosecuted without interruption, the contractors further obligating themselves to complete the construction of the road between San Lorenzo and Ibarra and establish the traffic on this section within a period of five years, counted from the completion of the studies and works of definite location.

Fourteenth.—The works of construction shall comprise, as in the Quito-Ibarra section, all the substructure as well as the superstructure in such a manner that the railway shall be totally and definitely finished and in a serviceable condition, with the corresponding equipment of rolling stock, shops, telegraph and telephone lines, etc. The quality of the rails, rolling stock, etc., shall be subject to all and each one of the specifications determined for the Quito-Ibarra section, it being understood that they are incorporated in the contract for the construction of the Ibarra-San Lorenzo section.

Fifteenth.—For the studies specified between San Lorenzo and Ibarra the contractors shall be paid at the rate of 1,200 sucres per kilometer of line localized. The points of reference shall be plainly indicated on the terrain every 50 meters, more or less, in such a form that they will not disappear.

Sixteenth.—In the exercise of this contract the Government, through the medium of the appropriate authorities, shall give the contractors all protection, so that order may be maintained on the works. The laborers and employees shall enjoy exemption from military service, in so far as may be compatible with the laws in force in this respect, except in case of international war. If the contractors request it, the Government shall appoint a police judge (comisario) with the necessary agents with jurisdiction in the camps, the salary of these employees to be paid by the contractors.

Seventeenth.—The Government may appoint one or more technical inspectors under the direction of the Department of Public Works, in order to inform itself of the progress of the works stipulated in this contract, which inspectors shall receive all assistance on the part of the contractors for the fulfillment of this duty. The salaries to be assigned to these employees shall be agreed upon between the Government and the contractors, if they are to be paid for account of the contractors, or by the Government only if the latter is to pay them direct. When the appointment is made exclusively by the Government, they shall be paid from the salaries referred to in clause 28. The salaries to which the present clause refers shall in no case exceed 2,000 sucres monthly.

Eighteenth.—Once the railway is terminated between Quito and Ibarra, accepted by the Government and placed at the service of the public, the Government, if it so wishes, in case of not administering it directly, may contract its operation and administration for a determined length of time. In such case the contractors, for their part, shall agree to take charge of the administration and operation for a period of not to exceed five years, in conformity with the conditions determined for that purpose.

Nineteenth.—For the construction of the railway in the section between Quito and Ibarra and for placing it in service for public traffic, continuing at the same time with the studies and works indicated in clause 11 between Esmeraldas and Ibarra, the contractors bind themselves to secure the sum of 6,000,000 sucres, referred to in the attached estimate which is considered as an integral part of this contract. This sum the contractors shall secure in the following form: Fifteen days after the present contract becomes legally effective one of the national banks shall place at the disposition of the work represented by the contractors the sum of 3,000,000 sucres, which from that time shall draw interest at the rate of 9 per cent annually. After a period of time of not less than 18 months shall have elapsed from the date of the first deposit the same bank shall place at the disposition of the work another deposit of 3,000,000 sucres which shall also draw interest at the same rate of 9 per cent.

Twentieth.—The contractors shall also secure at the proper time the sums that they may require to continue and complete the construction of the railway in its entire extent between San Lorenzo and Ibarra, counting upon the following resources for this purpose: (*a*) The hypothecation of the work constructed and delivered between Quito and Ibarra; (*b*) any other revenue or funds that may be created by legislative decree, from the time this contract goes into effect; (*c*) the proceeds from the sale of lands, mines, or resources of any other nature that may be obtained for this same purpose.

Twenty-first.—The lender bank, which shall also be the fiduciary, shall receive a commission of 1 per cent on the 6,000,000 sucres which constitute the amount of the loan at the time the provision of funds is made to the contractors.

Twenty-second.—For security of the loan of 6,000,000 sucres which the contractors are to obtain, the following revenues are pledged, namely: The revenues which the said railway now has at its disposal, according to the budget and laws in force in 1925, amounting to 909,675 sucres 43 centavos; leaving free for new expenditures or as a basis for new loans, for the section Ibarra to San Lorenzo, such new revenues or resources as may be created in the future, as provided in items (*a*), (*b*), and (*c*) of clause 20.

Twenty-third.—During the life of this contract the revenues at present assigned to the railway (that is to say, the annual sum of 909,675 sucres 43 centavos) shall in no case be diminished nor shall any reform be made respecting them as regards their collection or expenditure, except by agreement with the contractors and the lender bank.

Twenty-fourth.—It is understood that any increase that may be made in the future in the revenues of the Quito-Esmeraldas railway over the 909,675 sucres 43 centavos of the national budget for the year 1925 shall be invested by the contractors either directly or as guaranteeing a new loan; but in either case only for the construction of the Ibarra-San Lorenzo section, to the end of permitting the termination of the works in this section in the least possible time.

Twenty-fifth.—The fiduciary bank, in any case, even in that of suspension of the work, resolution, or rescission of the contract, shall have the right to continue collecting the annual budget quota of 909,675 sucres 43 centavos until reimbursed for all the amounts it shall have invested in the work, with the respective interest and commission.

Twenty-sixth.—If for any reason the proceeds of the taxes or revenues assigned to this work, in accordance with clause 22, should result at the end of the year to be less than the sum of 909,675 sucres 43 centavos, the Government binds itself to pay deficit to complete the sum mentioned up to the end of the respective year.

Twenty-seventh.—The persons authorized by law to receive the revenues destined to the work shall deliver them immediately and directly to the fiduciary bank, and this bank shall credit the amounts, as fast as turned over to it, in account current, with the reciprocal interest of 9 per cent. It is understood that the annual budget quota of 909,675 sucres 43 centavos, in conformity with the respective law, shall be delivered in monthly installments of 75,806 sucres 29 centavos. In case of delay the Government shall pay interest at the rate of 12 per cent annually on the delayed quota. The collector, tax gatherer, or treasurer of the funds for the work of the railway which are assigned to this contract shall be appointed by the Government by agreement with the bank.

Twenty-eighth.—The balance of the effective funds of the railway from Quito to Esmeraldas which are in possession of the respective treasurer at the time of signing this contract shall be turned over to the fiduciary bank and the contractors shall devote it to the following purposes: (*a*) To the payment to Dr. Angel Subia at the termination of his contract; (*b*) to the payment to Señor Miguel Suarez Davila at the termination of his contract; (*c*) to the payment to Alejandro Benalcazar, Dr. Jose Guzman Proano, and Jenaro Rubianez at the termination of their contract; (*d*) to the payment of any other legal or administrative obligation that the junta may have pending, such as expropriations, orders for material, salaries of employees, etc., among which shall also be comprehended the payment of 25,000 sucres, which shall be placed at the disposal of the junta, to be expended in the repair of the Pailon road in accordance with provision contained in article 6 of legislative decree of October 3, 1916; and (*e*) any balance remaining after covering the obligations stipulated in letters (*a*), (*b*), (*c*), and (*d*), above, shall be employed by the contractors for the works of the section of the line between San Lorenzo and Ibarra.

Twenty-ninth.—The contractors shall respect the contracts made by the junta, which they may substitute in its rights and obligations. The works delivered shall be surveyed by an engineer appointed in accordance with clause 17, to ascertain the cubic contents or measurements.

Thirtieth.—The contractors, for nonfulfillment of the obligations they take upon themselves by this contract, shall pay a fine of 10,000 sucres for each month of delay in the termination of the work contracted between Quito and Ibarra. They shall pay an equal fine for the delay or nonfulfillment of the obligations contracted for the San Lorenzo-Ibarra section.

Thirty-first.—To guarantee payment of the fine stipulated in the foregoing clause, the contractors shall leave as a reserve fund 5 per cent of the amounts they withdraw for the construction. It is understood that as fast as the work is terminated in sections of 100 kilometers the contractors may withdraw the said 5 per cent in the proportion corresponding to the 100 kilometers completed.

Thirty-second.—The contractors expressly and categorically renounce all diplomatic claims or intervention—any and all difficulties that may arise to be decided in the form terminated in clause 10, and in conformity with the Ecuadorian laws.

Thirty-third.—If the contractors for any reason should be unable to direct the works personally, they shall intrust the general direction of the works to an engineer of recognized competency in the opinion of the Government.

Thirty-fourth.—For the sum agreed upon, the contractors shall execute all the works and shall entirely fulfill the obligations of this contract, it being understood that for no cause shall they solicit increase of prices, except in what refers to the works of the San Lorenzo-Ibarra section, which shall be susceptible of increase or decrease of prices, as the case may be, based on the price stipulated in clause 15.

Thirty-fifth.—The junta central of the railway from Quito to Esmeraldas, while it endures, may formulate a budget, provided it does not exceed the sum of 200 sucres monthly, payable by the contractors.

Thirty-sixth.—In case of disagreement between the parties respecting what is stipulated in this contract, referee arbitrators shall be appointed, one by each party, and in case of disagreement between these arbitrators, the parties, in turn, shall appoint a third, whose decision shall be final and nonappealable. It is understood that if one of the parties fails to appoint an arbitrator within 60 days, without just cause, the one designated by the other party shall decide.

Thirty-seventh.—All the materials, tools, etc., for this work that are transported by the Guayaquil & Quito Railway shall pay the Government tariff.

Thirty-eighth.—This contract shall become legally effective as soon as recorded by a notary public.

Thirty-ninth.—Inclosure No. 1: Estimate of the cost of the works which are enumerated below:

		Sucres
1.	Construction and completion of terreplein between Yaruqui and the Quinche ravine to the north of the town, approximately 6¾ kilometers	295,000
2.	Design, building, and completion of all the bridges, works of construction, culverts, and drains between Quito and Ibarra, both of bridges the execution of which has been commenced and of those not yet commenced	400,000
3.	Nine thousand two hundred tons of rails of the type of 45 pounds per yard, and their accessories, placed in Quito	2,440,000
4.	Crossties at the rate of 1,600 per kilometer, including sidings	840,000
5.	Construction of stations	80,000
6.	Stations for water and fuel supply	45,000
7.	Construction of the telegraph and telephone lines, with their respective apparatus	100,000
8.	Construction of principal mechanical shop and another auxiliary one, equipped with necessary machinery, for the terminals	100,000
9.	Purchase and setting up of two locomotives of 70 tons each and of sufficient motive power to haul five cars each	320,000
10.	Purchase and setting up of two coaches	72,000
11.	Purchase and setting up of 10 freight cars	55,000
12.	Preparation of the roadway, placing of rails, ties, ballasting the line, etc., to place it in condition for traffic	715,000
13.	Studies of definite location for a line that will connect Ibarra with San Lorenzo, at the rate of 1,200 sucres per kilometer, in an approximate distance of 190 kilometers	228,000
14.	Works of construction between Ibarra and San Lorenzo	310,000
	Total	6,000,000

It is understood that at the time of signing this contract the treasurer of the railway from Quito to Esmeraldas shall deliver to the fiduciary bank the funds in his possession, amounting to approximately 500,000 sucres, which the contractors shall apply to the payment of certain contracts pending with Messrs. Subia, Suarez Davila, Guzman Proano, and others, and the balance remaining after covering these amounts, as provided in letters (*a*), (*b*), (*c*), and (*d*) of clause 28, shall be applied to the works of construction of the section of the line between Esmeraldas and Ibarra, in accordance with letter (*e*) of the mentioned clause of this contract.

Fortieth—(Inclosure No. 2, Quito-Ibarra section specifications).—The contractors, availing themselves of all the construction and substructure works already executed by the junta, shall complete those that are lacking in order that the railway may be complete with all the superstructural material which they shall furnish for their account and shall leave in service. The Government inspecting engineer shall take care that the following specifications are strictly complied with, in so far as they concern him:

Studies: Taking as a base the definite localization in the part where the terrepleins are to be made, the studies shall comprise (*a*) plan of definite localization, scale 1:2,000; (*b*) longitudinal profile, scale 1:2,000 and 1:200; (*c*) project of bridges, culverts, tunnels, and retaining walls. These plans, with details of construction on a large scale, shall contain a graphic or analytic estimate of the stability of the works.

Gauge: The same as that of the Guayaquil & Quito Railway, namely, 42 English inches. Maximum gradient tolerated, 3½ per cent compensated in the curves; minimum radius of curves, 70 meters; minimum tangent, 30 meters (between Ibarra and San Lorenzo, up to 20 meters will be accepted).

Platform: Four meters, including trenches in the cuts; 4 meters in fills and concrete bridges.

Slopes: In cuts, the minimum of one-fourth by 1 is prescribed, and, in general, it shall be adequate to the terrain; in fills, the slope shall correspond to the stability of the material; in the same form as has been followed in the part of the line constructed to date.

Drainage: "Coronation" trench in the places where necessary. Conduits for drainage and service of irrigation ditches of private property, employing syphons in indispensable cases.

Culverts: Rubblework of rough stone or of concrete.

Bridges: Rubblework of rough stone and cement. The facings shall be of hewn stone. The arched structure of rubblework of stone and cement or of concrete shall be preferred, but girders of structural steel will also be accepted. In general, for the masonry work and bridges, there shall be taken into account the overload corresponding to locomotives of 100 tons weight.

Tunnels: The dimensions on straight track shall be 4 by 5.60; on curves, 4.6 by 5.6. When not in rock or compact material tunnels shall have a facing of rubblework with cement, of form and thickness necessary to make them completely safe.

Mixtures: Of cement with clean sand and rubble. In the works of greater importance the mixture shall be employed in the following proportions: For the concrete, 1:2:4; for the mortar, 1:3. For works of lesser importance: Concrete, 1:3:6; mortar, 1:4.

Steel girders: Shall correspond to the overweight provided for, and shall be painted with two coats of protecting paint with oil base.

Ballast: The line shall be properly ballasted with material of stone, sand, or sandy earth of the best quality to be found within a distance of 10 kilometers where the cars can be operated and where it can be extracted from each side of the line as the works advance, cars being taken to use the best ballast at hand, in order to give the line all the solidity necessary to support safely an engine of 100 tons.

Crossties: Shall measure 2 meters in length and shall be divided into two classes, namely, first and second class, as follows: The sleepers or crossties of first class shall be 15 by 20 centimeters of section each, and those of second class 15 by 17 centimeters of section each. The repose faces shall be completely squared. The wood may be of eucalyptus, pantza, arrayan, motillon, or other species of equal resistance, and shall be extracted from mature trees whose diameter shall be not less than 35 centimeters at the base. The wood shall be solid and without cracks or fissures of more than 2 centimeters at the extremities. The ties shall be classified and accepted on the part of the Government at the time of delivery alongside the line during the period of construction. The sleepers or crossties of second class shall be used only on the tangents and in a proportion not to exceed 50 per cent.

Rails and accessories: Steel rails of 45 pounds weight per yard, type A. S. C. E.; angular fishplates with four bolts, spikes 5½ by $\frac{9}{16}$ inch, four spikes to the tie. In the curves of 60 to 75 meters of radius, guardrails and braces shall be placed. The resistance and conditions of the rails shall correspond to the standard of this type. The Government, at its expense, may designate a commissioner to inspect the rails at the factory and certify as to the tests made. The contractors, when making the order, shall advise the Government and give the address of the manufacturer. If the Government should not designate a commissioner, or if he should not present himself opportunely at the factory, the materials shall be dispatched without suffering delay for this cause. Guardrails shall be placed in the track at road crossings.

Stations: Four or more buildings shall be constructed for stations, distributing the estimated cost, by agreement with the Government, according to the importance of the stations. Twenty-five sidings and yards shall be constructed in accordance with the general plan of traffic which the contractors shall present, and, once approved by the Government, that number shall be constructed between sidings and "deltas" or "wyes" for reversing the direction of the locomotives, etc.

Shops: A principal mechanical shop and an auxiliary one. The contractors shall present the plans for the buildings and equipment of machinery and tools necessary for repairs to locomotives, cars, etc., corresponding to the estimate.

Rolling stock: Locomotives of the Mogul type, of 10 wheels, with traction power to haul one passenger car and four freight cars of a gross weight of 250,000 pounds on the gradient of 3½ per cent compensated, adequate for burning wood or coal, provided with Westinghouse brakes, and with water and every efficient type of equipment, accompanied by certificate of manufacture of the constructing house.

Coaches: Of the combination type for first and second class passengers; steel frame, similar in construction to the cars of the Guayaquil & Quito Railway and adequate for carrying 24 first-class and 36 second-class passengers.

Freight and stock cars: Of steel frame, closed type; walls and roof of zinc, 1,500 cubic feet of volume, 40,000 pounds capacity each, provided with Westinghouse air brakes and hand brakes, of the type used on the Guayaquil & Quito Railway. All the rolling material shall be adequate to the characteristics of the railway, especially to the curves of minimum radius on the maximum grade.

Telegraph and telephones: Telegraph of ground circuit and telephone of metallic circuit, of galvanized iron wire, not smaller than No. 9, glass insulators with cross arms and pins of wood, on posts also of wood, 7 meters in height above the ground and not less than 20 centimeters in diameter at the base, placed at a distance of 70 meters apart. In the stations of first and second class, telegraph and telephone apparatus shall be installed; in those of third class, telephones only.

San Lorenzo-Ibarra section.—Within the period of two years the contractors shall deliver to the Government the definite and complete studies of this section. The plan shall adopt the idea of the greatest economy in operation, without burdening disproportionately the cost of construction. The road shall be planned with the same characteristics as the Quito-Ibarra section, in such a manner that on completion of the work, the whole shall form a unitary railroad. The studies shall contain: (*a*) A topographical plan of location which shall contain all the polygonals that may be necessary. The exact topography shall be extended to 30 meters on each side of the polygonal. Scale, 1:2,000 in distance and the equidistant vertical of the lines of level, each two meters. (*b*) Longitudinal profile with notation of curves, tangents, masonry work, gradients, kilometerage, and stations. Scales, 1:2,000 and 1:200. (*c*) A general plan between San Lorenzo and Ibarra with the definite line and profile of the axis. Scales, 1:50,000 and 1:1,000. (*d*) Plans of the stations with switches, sidings, deposits, wyes for reversal of the locomotives, etc., on large scale, with all the details for the construction. (*e*) Definite plan, right of way, expropriations, service of aqueducts, road crossings, etc. (*f*) Plans of the buildings for stations: Frontage, plan, and sectional view, with details. (*g*) plans of the station: Water supply. (*h*) Complete sketch of bridges and masonry work in general, with details on a larger scale, and cubic measurement of materials and an analytic or graphic demonstration of stability. (*i*) All the plans shall be presented on transparent cloth. The camp memorandum books shall also be presented. (*j*) These studies shall be completed with a report covering a definite project, with specifications of the rolling material, for a complete operating service, an estimate of the probable traffic, and the detailed estimate of costs.

Construction: The construction in general shall follow the standards fixed for the Quito-Ibarra section.

Tunnels: The contractors may construct bridges of rubblework or of steel, as has been specified, but in no case shall they substitute excavations or tunnels for bridges or culverts, unless they be revetted (faced with stone, concrete, or other material) their entire length.

[NOTE.—A copy of legislative decree approved October 18, 1921, by which the Executive was authorized to make the foregoing contract (as also to contract for the construction of a wharf and customhouse at Guayaquil, and for the completion of the Sibambe-Cuenca and Ambato-Curaray railroads) is here inserted by the notary and incorporated in the contract. That portion of the decree which is pertinent to the present contract reads as follows:

"ARTICLE 5. The executive power is likewise authorized to contract with any person or company for the construction of the Quito-Esmeraldas Railway. The following revenues may be assigned to the contract to be made in accordance with this article: The revenues and funds destined to the railway, and the deposits of hydrocarbons and other minerals, in the adjudication and exploitation of which preference shall be given to the contractors in the four Provinces crossed by the railway, on such conditions as the Government may agree upon."]

SIBAMBE-CUENCA RAILWAY

The Huigra-Cuenca project has been under consideration since 1907, when E. Morley secured the concession. It was designed to start from Huigra, on the Guayaquil & Quito Railway, approximately 62 miles from Guayaquil and at an elevation of about 3,937 feet. The line was to run southward for about 93 miles through the rich Provinces of Azuay and Canar toward the Peruvian border to Cuenca.

The Government was to give $20,000 (United States gold) in 6 per cent bonds per kilometer, these bonds to be guaranteed by certain customhouse revenues and also by internal rents. The bonds were to be retired by means of a 1 per cent sinking fund and to be guaranteed by a first mortgage on the railway. The interest on the bonds was to be paid, so far as possible, out of the profits of operation. The contractors, according to the agreement, were to control and operate the property for 50 years.

In the latter part of 1912—little or no progress having been made in actual construction work (owing to the failure to secure the necessary funds)—the Ecuadorian Government canceled its contract with Mr. Morley.

In February, 1914, another contract was signed with the well-known German contractors, Orenstein-Koppel, of Berlin, for the construction of a railroad from Huigra to Cuenca. At that time the ability of this firm to carry out the contract was unquestioned, but, following the outbreak of the World War, the efforts of the firm to carry out the contract relaxed and work ceased altogether in 1915 following the completion of about 11 miles. Shortly thereafter it was decided to change the starting point of the road from Huigra to Sibambe.

In 1919 interest in the projected railway from Huigra to Cuenca was revived. Surveys were made and a pamphlet published bearing upon the question. The Director of Public Works was authorized to make a study of the plans and specifications and to make such recommendations as might be of public benefit. Hope was entertained by the interested parties that this road would yet be substituted for the one now building from Sibambe to Cuenca, passing the coal mines at Biblian. But the road is still in the projected state, with little or no prospect that any further work will be attempted in the near future, mainly because of the determination to complete the Sibambe-Cuenca line.

The contract for the construction of the Tipococha-Tambo section of this railway was awarded on June 21, 1925, to the Compañía Constructora del Azuay, financed by bankers and capitalists of Cuenca and Guayaquil. The estimated cost of the work is 2,000,000 sucres, including locomotives, freight and passenger cars, surveys and location of the line as far as Cuenca; telephone and telegraph stations, workshops, etc. The fulfillment of the contract is guaranteed by the company by a deposit of 300,000 sucres—work to commence immediately and to be completed within two years. The same company is to be given preference in a new contract for the continuation of the line to Cuenca. The promoter and manager of the construction company is Señor Roberto Crespo Ordonez, of Cuenca, who should be addressed in reference to purchases.

PUERTO BOLIVAR-TO-RIO AMARILLO RAILWAY

The history of this road dates back to 1909, when it was proposed that the Government build a road to link up Puerto Bolivar with the Amazon. Surveys were made from time to time, but it was not until October, 1919, that any actual construction of the so-called Trans-Amazonic Railway took place. In this year a concession was signed and granted by the Government to Chilean capitalists for the construction of a railway at an estimated cost of £6,000,000. The projected railway was to run from Puerto Bolivar by a northern route to Cuenca with a branch extending to Loja, but it did not develop further than the securing of the concession. Included in this project was the absorption of the El Oro Railway already constructed between Puerto Bolivar and Pasaje. Nothing of interest occurred during the following years until the decree of July 12, 1923, by which the legislature provided that steps be taken for the construction of a railroad that started from Puerto Bolivar and reached the regions of Loja, Cuenca, and Azogues. As a result of this decree bids were called for in the newspapers, and as a result on April 10, 1924, a concession was granted to Manuel A. Navarro, Ecuadorian, and Carlos Brown, American, engineers, to construct a portion of this railway from Puerto Bolivar to Rio Amarillo. The proposed right of way was changed from that of the original plan, this road going by a southern route. The principal details of this concession are as follows:

1. M. A. Navarro and Carlos Brown, the contractors, undertake to locate, construct, and equip the railway from Puerto Bolivar to Loja, in the section from Puerto Bolivar to Rio Amarillo, in accordance with the stipulations hereinafter expressed.

2. Construction shall commence May 1 of the present year [1924], and the finished work shall be delivered on December 31, 1927.

3. The work contracted comprises: The studies for location, the construction of the terrepleins, bridges, culverts, and trenches; the provision and placing of ballast, crossties, and rails; the construction of telegraph and telephone lines; the construction of stations, freight houses, water tanks, and shops; the provision of rolling stock and "maestranzas" (machinery necessary for usual repairs to locomotives and cars, and machinery and tools appropriate for mechanical, blacksmith, and carpenter shops); all in accordance with the technical specifications which shall be added later and which shall be considered an integral part of this contract.

4. The Government obligates itself to pay the contractors at the following rates for the works enumerated in the foregoing clause: 1,000 sucres for each kilometer of studies and localization; 15,000 sucres for each kilometer of grading; 5,000 sucres for each kilometer provided with crossties and railed (exclusive of the price of the rails, switches, fishplates, bolts, and spikes); 3,000 sucres for each kilometer ballasted; 500 sucres for each kilometer of telegraph and telephone line; 4,000 sucres for each kilometer for construction works (bridges, culverts, trenches, retaining walls, etc.), whether there are such works in each one of the kilometers or not and regardless of their cost in the kilometers where they shall be constructed.

5. If the Government does not provide the rails, switches, fishplates, bolts, and spikes, in accordance with the contract entered into with the South American Development Co., the contractors obligate themselves to furnish this material placed on the wharf of Puerto Bolivar at cost price, but the Government is not obligated to purchase this material through the medium of the contractors.

6. As also the following rolling stock: Three locomotives of 15 to 20 tons without tender, one of which shall be of the passenger type for operating on grades and easy curves with a speed of 40 kilometers per hour; the other two shall be of flexible wheels capable of operating on curves of 35 meters and of developing sufficient traction power to haul a train at a speed of 15 kilometers per hour on a continuous rising grade of 35 per 1,000. The locomotive shall burn wood and shall be capable of being transformed for burning petroleum. The tender shall have capacity sufficient to store 8,000 to 9,000 liters of water

and 2 to 3 cubic feet of wood. Four passenger cars, two first class with fixed transverse seats and aisles through the center; two second class with fixed longitudinal seats and two aisles. Trucks, platforms, and accessories for 10 cars. All this material shall be furnished by the contractors at cost price. For the effects of this clause and of the foregoing, the contractors shall present to the Government, within the first year of this contract, the original proposals of various American and European houses and the Government shall choose the one that may be most convenient to its interests. The same conditions shall rule for the "maestranza" (see clause 3). It is understood that the Government may acquire this material elsewhere without the intervention of the contractors.

7. The contractors also undertake to construct and equip the stations, freight houses, shops, and water tanks, in accordance with the drawings and specifications duly approved by the Director General of Public Works, at cost price plus 6 per cent which the Government shall pay the technical direction of these works.

8. The Government shall appoint the engineers and inspectors it may deem necessary for the proper control of these works. * * * The salaries and expenses occasioned by the inspection, as also those of the office of the treasurer of this railway, shall be paid from the funds destined to the construction of the said railway.

9. The studies and location shall be paid for by sections between obligatory points or points considered as such beforehand; the grading, laying of the rails, ballasting, and the telegraph and telephone lines shall be paid for separately by sections of 1 kilometer finished; the stations, freight houses, shops, and water tanks shall be paid for monthly according to the work executed, a bill of expenses being attached to the vouchers. The construction works, such as bridges, culverts, trenches, retaining walls, etc., shall be paid for by each kilometer in which they are completed and terminated in the form determined in clause 4.

10. The plans and vouchers shall be approved by the Director General of Public Works, and the Minister of Public Works shall order the payment of the vouchers which bear the indorsement of one of the inspecting engineers and the approval of the Director General of Public Works. The vouchers shall be paid, at the latest, 15 days after their presentation to the Director General of Public Works with the indorsement of one of the inspecting engineers.

11. The definite delivery of the work shall be effected as soon as it is entirely finished, the care and conservation of the work during the time of construction being for account of the contractors. Once the work is delivered in accordance with the contract, the Government shall proceed to release the bonds given by the contractors. * * *

The Government guarantees the payment of the work contracted with funds designated in the legislative decrees for the construction of the railway from Puerto Bolivar to Loja. The funds that the treasurer of the said railway has collected to date and those that may hereafter be collected shall be deposited in the banks established in the Republic, at the discretion of the Government, and shall not be withdrawn without the joint authorization of the Minister of Public Works and of the contractors, excepting such amounts as may be needed for the payment of salaries and expenses of the treasurer's office, inspection, and administration, which may be withdrawn on the order of the Minister of Public Works alone, as also the payments that the Government may have to make for account of prior contracts.

Information as to this proposed contract may be obtained by addressing either of the engineers, Apartado 60, Quito, Ecuador.

FERROCARRIL AL CURARAY (AMBATO TO CURARAY)

The history of this road dates from March 13, 1905, when the Government of Ecuador, under General Plaza, contracted with Charles H. Moore, an American engineer, to run surveys preliminary to constructing a railway from Ambato to the Rio Curaray, a distance of approximately 180 miles. On June 3, 1905, work on this survey was begun at Ambato and continued until March of the following year. Because of a change in the Ecuadorian Government, work was discontinued in August, 1906. Proposals to construct the railway in accordance with the above survey were revived from time to time, but no actual construction was begun.

In the middle of 1910 bids were asked for its construction, but none were accepted because of the unreceptive attitude of the financial world in regard to bond issues. When General Plaza was reelected President in 1911 his policy of interior development was revived and among the projects was that of the Ferrocarril al Curaray. It was decided finally to proceed with the work, expenses to be borne by the Government. A second contract was entered into with Charles H. Moore for the direction of the engineering and construction work. The construction proceeded spasmodically until 1922, when the road was opened to Pelileo, a distance of about 25 kilometers. On March 1, 1923, the Leonard Exploration Co. was granted a concession for the continuance of this line from Pelileo to Banos. The concession must be carried out by March 1, 1929, and is based on the exploitation of petroleum fields in the eastern part of Ecuador. At the present time the road is owned and operated by the Government and extends a distance of 25 kilometers from Ambato to Pelileo.

Purchases for the road are made by the superintendent-inspector, Ambato, Ecuador, and are subject to the approval of the Ministry of Public Works, Quito, Ecuador.

For the year ended May 31, 1923, the road showed passenger revenues of 7,527 sucres and freight revenues of 10,909 sucres. The road carried approximately 8,000 tons of freight, mostly stone, during the year.

Gauge.—The gauge of the road is 42 inches.

Ties.—Ties are of wood, mostly eucalyptus, and spaced 17,000 to the kilometer.

Fuel.—Wood secured locally is used as fuel.

The road has two locomotives of 16 and 20 tons each, three passenger and seven freight cars.

Light repairs can be made in Ambato.

QUITO TRAMWAYS CO.

This company was organized under the laws of the State of Delaware in 1910. The company is owned entirely by the Ecuadorian Corporation (Ltd.), of London, whose authorized capital is £500,000 in shares of £1, of which £310,687 has been issued and all but 19s. per share on 1,007 shares paid up. The company has an exclusive franchise for the operation of electric tramways in Quito for 30 years from October, 1914. At the present time the company operates 7½ kilometers of track and has approximately 2½ kilometers ready for use when official sanction is granted by the city of Quito. No freight is hauled, the traffic being made up entirely of passengers.

For the fiscal year ended June 30, 1925, the operating officials of the road are as follows:

E. H. Norton, president, 43 Cedar Street, New York City.
Benoni Lockwood, vice president.
J. C. Gillespie, secretary and treasurer, resident manager, Quito, Ecuador.

Purchases are made through the operating agent for the company, George O. Houston, who is also assistant secretary and treasurer and is located at 43 Cedar Street, New York City.

Gauge.—The gauge of the road is 3 feet 6 inches.
Grades.—The maximum grade is one of 8 per cent, extending a distance of about 200 meters.
Ballast.—The track is rock ballasted.
Ties.—Ties of guayacan, obtained from the coastal regions of Ecuador, are used. Ties are 7 feet by 8 inches by 8 inches and spaced 28 inches on centers.
Rails.—T type A. S. C. E. rails of 55, 70, and 85 pounds, in 30-foot sections, are used.
Fuel.—Electricity is used for power.
Maintenance.—The road is in good condition.

There are two large double-truck and seven small single-truck passenger cars, manufactured by an American company.

Most of the repairs are made at the barn of the company in Quito, where about 12 men are employed.

NATIONAL TRAMWAYS CO.

(COMPAÑÍA NACIONAL DE TRANVÍAS)

This company was organized in 1919 and initiated a tramway service between Quito and Cotocallao, a distance of 9 kilometers, in June, 1923. The financial condition of the company is reported to be unsatisfactory. It is understood that the Sociedad Bancaria del Chimborazo, of Riobamba, Ecuador, holds a large mortgage on the property. Unfortunately the company may not operate electricity, as the Quito Tramways Co. has that right exclusively. The company has operated intermittently since 1923, and at the present time has been leased to Juan Buis, a Dutch citizen. He receives all revenues, pays all expenses, and is entitled to the net profit. At the present time it is estimated that the gross receipts of the company are approximately 1,600 sucres a month.

Purchases for the company are made by Juan Buis, Quito, Ecuador.

Grade.—The maximum grade of the road is one of 4 per cent for 200 meters.
Ballast.—The road is rock ballasted.
Ties.—Ties obtained locally, of eucalyptus, 7 feet by 8 by 8 inches, spaced 3 feet on centers, are used.
Rails.—Rails of the girder type, 30 feet long and weighing 45 pounds to the yard, are used.
Fuel.—Gasoline is used for fuel.
Signaling.—There is no signaling equipment on the road.
Maintenance.—The road is in fair condition now but is deteriorating.
Bridges.—There are a few small wooden bridges.

There are two gasoline-operated converted trucks, which are used as motive power. The road also has five passenger and two freight cars, all constructed locally.

EMPRESA ELÉCTRICA DEL ECUADOR

The corporation called "Empresa Eléctrica del Ecuador" was organized April 1, 1925, under the laws of the State of Maine, to take over and operate three belt lines in Guayaquil, Ecuador, extending 8 miles in length, of 56½-inch-gauge track. Under its charter the company has the power to own and operate lighting systems, power systems, and railways; do brokerage business; purchase, own, and dispose of property and stocks, etc. The company is capitalized for $1,500,000. It is planned to purchase new equipment in the very near future. The purchasing agent of the company is The Phoenix Utilities Co., 71 Broadway, New York City, where the Empresa Eléctrica also has an office. The resident manager is H. S. Foley, Apartado 247, Guayaquil, Ecuador.

EMPRESA DE CARROS URBANOS

This company owns and operates approximately 10 miles of 56½-inch-gauge tramways in Guayaquil. The motive power at the present time is animal traction. The resident manager is Juan Jose Avellan, who should be addressed in care of the railroad at Guayaquil, Ecuador.

BABAHOYO RAILWAY

The Babahoyo Railway is owned by the municipality of Babahoyo. The road is of 3-foot 6-inch gauge and has been constructed as far as Guaranda, a distance of 19 miles.

VALDEZ MILL

The mill operates a small steam railway in connection with its sugar plantation. Purchases for the railway are made by the manager of the mill, who should be addressed in care of Ingenio Valdez, Milagro, Ecuador.

SAN CARLOS MILL

This mill operates a small steam railway from Conducta to its mills a distance of not more than 5 kilometers. The road carries a few passengers. Purchases for the road are made by the manager of the company, who should be addressed in care of Ingenio San Carlos.

CUSTOMHOUSE RAILWAY

The customhouse at Guayaquil operates approximately 3 miles of 42-inch-gauge track. The road has two locomotives weighing 12 tons and about 40 small flat cars. Inquiries in reference to prospective sales to the road should be addressed to the inspector of customs at Guayaquil.

THE GUIANAS

BRITISH GUIANA

GENERAL CHARACTERISTICS

British Guiana lies on the northeastern coast of the continent of South America between parallels 1° to 8° north and meridians 57° to 61° west. It has a coast line of about 270 miles, extending almost from the eastern mouth of the river Orinoco to the river Corantyne, and is bounded on the north by the Atlantic Ocean, on the south and southwest by Brazil, on the east by Dutch Guiana, and on the northwest by Venezuela. It varies in length (from the ocean southward) from 540 miles on the western to 300 miles on the eastern side. The area is 89,480 square miles.

The colony may be divided broadly into three belts. The northern one is a low-lying, flat, and swampy strip of marine alluvium known as the coastal region. This rises gradually from the seaboard and extends inland for a distance varying from 10 to 40 miles. It is succeeded by a broader and slightly elevated tract of country composed of sand and clay. This belt is chiefly undulating land and is traversed in places by sand dunes rising from 50 to 180 feet above sea level. The more elevated portion lies to the southward of the above-mentioned regions. It rises gradually to the southwest between the river valleys, which are in many parts swampy, and contains three principal mountain ranges, several irregularly distributed smaller ranges, and in the southern and eastern parts many isolated hills and mountains. The eastern portion is almost entirely forest clad, but on the southwestern side there is an extensive area of flat grass-clad savannah elevated about 400 to 700 feet above sea level.

The country is traversed by many large rivers, which, with their numerous tributaries and branch streams, form a vast network of waterways. All the larger rivers of the colony are impeded above the tideway by numerous rapids, cataracts, and falls, which render the navigation of the upper reaches difficult.

There are approximately 322 miles of good roads, principally government highways.

Transportation facilities are afforded more by rivers than by any other means. The total railroad mileage of British Guiana is slightly more than 100, all but 26 miles of which are along the coast. Of this mileage 79 miles of track is operated by the Colonial Transport Co., 18½ miles by Sproston's Limited, 4 miles is operated on the Blairmont sugar plantation, and 5 miles on the Port Mourant plantation. Recently it was proposed to construct a road following one of five "rights of way" of from 76 to 145 miles in length which would connect the diamond region with a convenient shipping point on one of the principal rivers.

A discussion of these roads appears in the following pages.

COLONIAL TRANSPORT SYSTEM

SURVEY OF DEVELOPMENT

The history of this system dates back to March 10, 1837, when at a public meeting it was resolved to construct a railway between Georgetown and the stream of Mahaica. A prospectus was issued but no action ever came of it. On September 3, 1845, a prospectus of the original Demerara Railway was issued in London and British Guiana. Subscriptions were invited for 10,000 shares of £25 each, payable in installments. The proceeds of the stock sale were to be used to construct a line 20 miles in length from Georgetown eastward along the coast to Mahaica. The charter for this railway was granted by the British Guiana Government in Ordinance No. 2 of 1846, dated July 18, 1846. The company was incorporated October 30, 1846, and the first grading was done in the summer of 1847. The enterprise had been floated during a great railway boom in England, and as this boom collapsed shortly after construction work had commenced, many of the shareholders who were interested in other railway properties found themselves unable to continue installment payments on the Demerara Railway shares, and in 1849 the capital was reduced to £175,000, each of the 10,000 shares being reduced from £25 to £17 10s.

In 1850 the Government of British Guiana loaned the railway company £50,000 provided for in Ordinance No. 9 of 1850 and in 1852 authority was obtained in Ordinance No. 2 of 1852 to borrow £30,000 additional to complete the road up to Mahaica and to equip it.

This assistance from the Government of British Guiana saved the situation. However, only sufficient funds could be raised to construct 5 miles of road, Georgetown to Plaisance. This short line was opened for traffic in 1848 and is actually the oldest railway in South America.

In the articles of incorporation the general direction and management of the affairs of this company were vested in two committees of not less than nine members each—the London committee and the Demerara committee. The London committee was to be formed of shareholders resident in England, and the Demerara committee of residents of the colony. (British Guiana was formerly known as Demerara.) This latter committee was charged with the local direction and management " subject to the absolute control in all things of the said London committee."

Ordinance No. 3 of 1855 amended the previous ordinance and declared " the general direction and management of the affairs of the Demerara Railway Co. shall be vested in not less than five or more than seven shareholders, resident in England and to be styled 'the general committee.' "

By Ordinance No. 5 of 1861, the railway company was authorized to borrow £115,000 as perpetual preference stock to complete the line to Mahaica and to pay off all bonds and preference stock issued and all other debts and liabilities of said company.

The Demerara Railway Co.'s capital, by Ordinance No. 18 of 1861, was limited to £165,000 of ordinary stock and £115,000 of perpetual preferred stock bearing 7 per cent interest.

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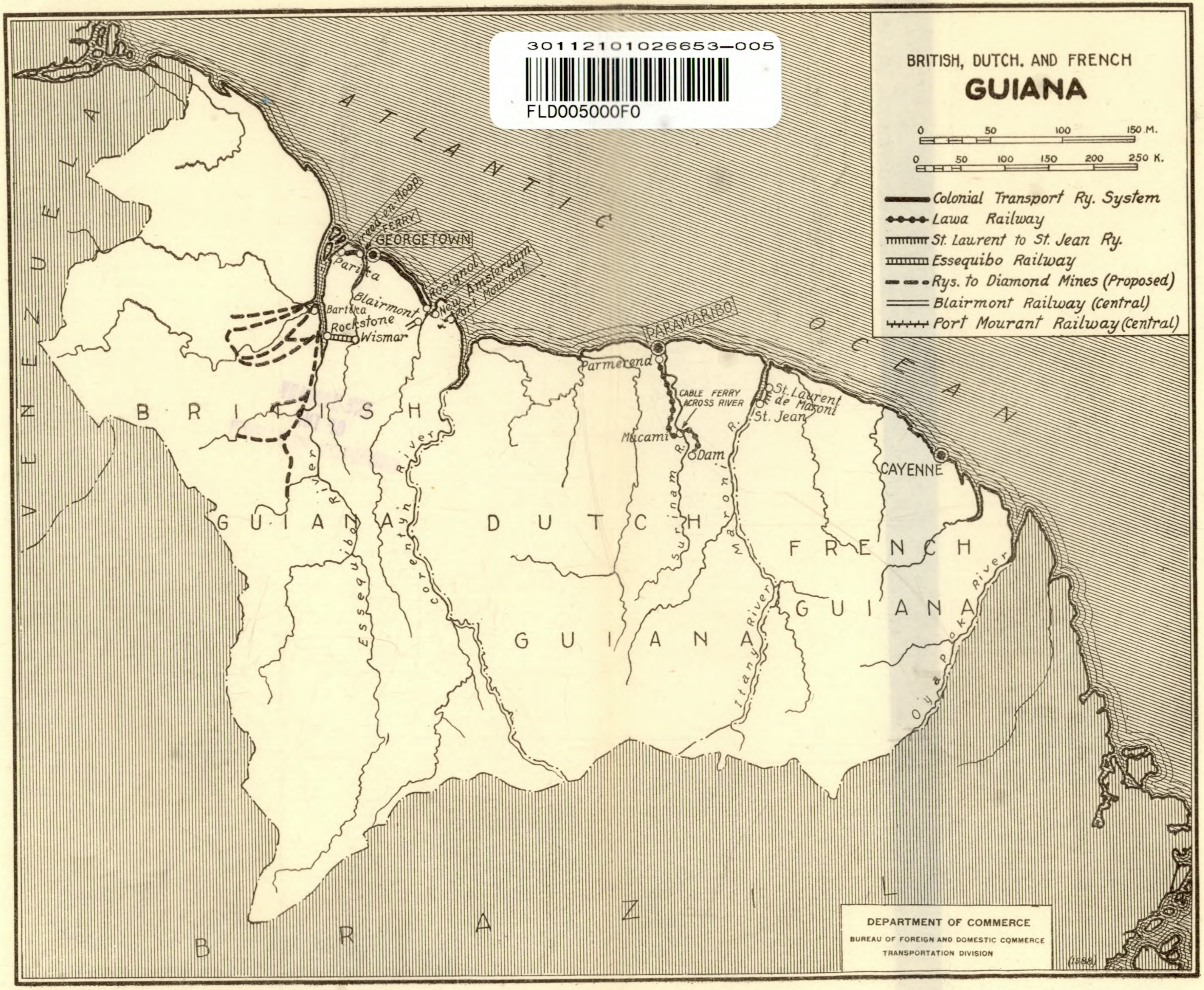

FIG. 7

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

On January 31, 1896, in ordinance No. 8 of 1896 and by agreement made between the Crown agents of the colonies in London on behalf of the colony and the Demerara Railway Co., the extension of the railway was contracted for, from Mahaica to Blairmont on the east coast (then called the "Berbice Railway") and from Vreeden-Hoop to Philadelphia, westward from Georgetown, styled the "West Coast Railway."

The Demerara Railway Co. was authorized to raise for the purpose of constructing the above roads (both pounds and dollars are used in this ordinance) $1,500,000 by issuing shares of £10 each. Of this amount, $1,250,000 was to be used in the construction of the extension of the existing road, Mahaica to Blairmont, and $250,000 in the construction of the West Coast road, the Government guaranteeing 4 per cent dividend on the $1,500,000 of stock used in making these new extensions.

By British Guiana ordinance No. 8 of 1901, the time for completion of the Berbice Railway was extended to June 30, 1901, and the Demerara Railway Co. was authorized to borrow additional funds—£70,000 for which debenture stock was to be issued—and to cancel the £10,000 of original ordinary stock, which had never been issued.

This committee submitted a preliminary report on November 27 of the same year, and a final report on March 31, 1919, and as a result of its recommendations the colony, under contract dated July, 1921, acquired by purchase the assets and liabilities of the Demerara Railway as a going concern as from January 1, 1919, assuming liability as from that date in respect of all expenditure incurred. Finally, as from January 1, 1922, the Government assumed control of the railways, amalgamating the management with that of the Colonial Steamer Service under the name of the "Colonial Transport Department," and legislation providing for the management and control of the new service eventually became law on October 28 of the same year when ordinance No. 23 of 1922 (the colonial transport ordinance) was passed by the court of policy.

According to ordinance No. 23 of 1921 (railway purchasing ordinance), the capital of the Demerara Railway Co. at the time it was acquired by the British Guiana Government in December, 1921, was as follows: £165,000 ordinary stock; £115,000 7 per cent perpetual preference stock; £312,500 4 per cent cumulative extension preference stock; £32,200 3½ per cent preferred ordinary stock; £70,000 4 per cent debenture stock; total, £694,700.

The conditions of sale were that the British Guiana Government was to assume the payment of the permanent annuities on the outstanding stock, amounting to $137,290 per annum, and the capitalized value shown in the books of the British Guiana Government as representing the cost of this railway is $2,745,800 (the annuities paid, $137,290, being 5 per cent of this capital).

When the British Guiana Government took over this railway there were 16 locomotives on the entire system; the ages of the 16 were as follows: Two were built in 1863, one in 1872, two in 1878, four in 1899, three in 1900, two in 1904, one in 1915, and one in 1921. As soon as the railways were transferred to the Government two new locomotives were purchased, 7 carriages were entirely rebuilt, 45 wagons were rebuilt and 72 repaired, and, altogether, a general overhauling of equipment, roadbed, bridges, stations, etc., was carried out.

At the present time the road is operated by the Colonial Transport Co. It has 79 miles of track in operation, of which 60½ miles extend eastward from Georgetown to Rosignol and 18½ miles from Vreed-en-Hoop, on the west bank of the Demerara River, to Parika. The company also operates steamship services in connection with its railway lines. The company has three divisions for the sake of operating efficiency. The divisions are the East Coast Railway, the West Coast Railway, and the steamship services.

Purchases for the road are made by the manager of the Colonial Transport Co., who should be addressed in care of the railroad at Georgetown.

FINANCES

During the calendar year 1923 the gross earnings of the road amounted to $617,361, being an increase of $55,477 over receipts for 1922. In addition to this amount there is a sum of $53,607, representing subsidies in respect of steamers and launches operated in sparsely settled districts, making a total income of $67,969. The following tables show the expenditures and receipts of both railway and steamship lines:

Expenditures and Receipts

EAST COAST RAILWAY

Items	1922	1923	Items	1922	1923
EXPENDITURES			RECEIPTS		
Maintenance and renewal of way and works	$118,874	$136,537	Traffic receipts: Passengers	$129,672	$142,867
Locomotive, carriage, and wagon expenses	120,525	114,108	Parcels and miscellaneous traffic	31,961	36,392
Traffic expenses	49,823	55,483	Goods	126,055	118,276
General charges (proportion)	17,399	17,607	Miscellaneous receipts	9,099	9,171
Compensation (accidents and losses)	46	291	Total	296,787	306,706
Rates and taxes	2,276	4,743	Deficit	12,156	22,063
Total	308,943	328,769		308,943	328,769

WEST COAST RAILWAY

EXPENDITURES			RECEIPTS		
Maintenance and renewal of way and works	$60,180	$60,289	Traffic receipts: Passengers	$53,060	$61,900
Locomotive, carriage, and wagon expenses	30,742	32,220	Parcels and miscellaneous traffic	2,714	3,191
Traffic expenses	12,715	12,197	Goods	9,628	8,875
General charges (proportion)	8,700	5,869	Miscellaneous receipts	879	509
Compensation (accidents and losses)	8	14	Total	66,281	74,475
Rates and taxes	--------	6	Deficit	46,064	36,120
	112,345	110,595		112,345	110,595

EXPENDITURES AND RECEIPTS—Continued

STEAMER SERVICES

Items	1922	1923	Items	1922	1923
EXPENDITURES			RECEIPTS		
Working expenses:			Traffic receipts:		
Steamers	$123,792	$139,241	Passengers	$119,173	$138,745
Launches	--------	11,842	Goods	72,077	90,024
Motor cars	14,025	1,981	Special services	6,667	5,596
Traffic expenses	33,312	39,325	Miscellaneous receipts	900	1,817
Minor repairs to "stellings" (wharves), etc	--------	1,896	Total	198,817	236,182
Compensation (accidents and losses)	842	241	Deficit on working for 1922	13,311	--------
Engineering superintendence (proportion)	25,407	3,827		212,128	236,182
General charges (proportion)	--------	23,476			
Contribution to steamers replacement fund	12,500	3,000			
Reserve for depreciation of sundry assets	2,250	4,430			
	212,128	229,259			
Surplus on working for the year 1923	--------	6,923			
Total	212,128	236,182			

The balance sheet for the calendar year 1923 is as follows:

LIABILITIES

Accounts payable			$8,785
Steamers replacement fund			143,118
Specie insurance fund			847
Steamer service depreciation reserves			12,523
Railway renewals: Grant for special works from colonial funds under combined court resolution No. XLII of Aug. 16, 1922		$135,000	
Deduct:			
Appropriations, 1922	$104,278		
Appropriations, 1923	30,722		
		135,000	
Colonial treasurer:			
Unallocated stores advances (per contra)		161,028	
General advances		41,395	
Balance surplus and deficit account		2,397	
			204,820
Total			370,093

ASSETS

Capital account: Balance at debit thereof, being amounts expended on sundry capital assets from general funds of the department in respect of items not provided for, and in respect of which an appropriation from colonial funds will be sought		13,257
Stores		161,028
Traffic and other accounts receivable		24,443
Steamers replacement fund:		
Investments	$139,973	
Cash in hands of colonial treasurer	3,145	
		143,118
Specie insurance fund investments		738
Cash:		
Colonial Bank	24,310	
Cashier, head office	1,013	
Collectors at stations and "stellings" (wharves)	1,968	
Petty cash and impressed balances	218	
		27,509
Total		370,093

The following table shows the expenditures and receipts on capital account for the calendar year 1923:

Expenditures	Amount	Receipts	Amount
RAILWAYS		RAILWAYS	
Expenditure from colonial loan funds:		Colony of British Guiana loan account:	
Central workshop	$13,029	Ordinance 6 of 1916	$45,114
Rebuilding of bridges	13,887		
New locomotives	723	STEAMER SERVICES	
New corridor carriages	582		
2 motor trolleys	3,413	Colony of British Guiana loan account:	
Engine "Eza" overhaul	5,000	Ordinance 6 of 1916	214,344
Total capital expenditure, railways	36,634	Total capital receipts, railways, and steamer services	259,458
STEAMER SERVICES			
Expenditure from colonial loan funds:			
T. S. S. Queriman	183,000		
New launch engines	4		
S. S. Pariks	26,000		
Total, steamer services	209,004		
Grand total, railways and steamer services capital expenditure	245,638		

Following is a statement of the general working results for the calendar years 1922 and 1923:

Items	1922		1923	
	West coast	East coast	West coast	East coast
Receipts:				
Total earnings	$66,280.89	$296,786.76	$74,475.00	$306,706.00
Total earnings per open mile	$3,582.75	$4,905.56	$3,724.00	$5,112.00
Total earnings per train-mile	$1.57	$2.16	$1.37	$2.02
Passengers: Number carried	226,377	289,597	268,957	372,230
Passenger receipts	$53,059.46	$129,672.06	$61,900.00	$142,867.00
Percentage of total revenue	----------	43.69	83.12	46.58
Average receipts per passenger	$0.23	$0.45	$0.23	$0.38
Parcels and miscellaneous traffic receipts	$2,714.18	$31,960.69	$3,191.00	$36,392.00
Percentage of total revenue	4.10	10.77	4.28	11.87
Goods receipts	$9,628.29	$126,054.72	$8,875.00	$118,276.00
Percentage of total revenue	14.53	42.47	11.92	38.56
Tonnage	4,738	64,604	4,533	64,707
Average receipts per ton of goods	$2.03	$1.94	$1.96	$1.83
Expenditures:				
Total expenditure	$112,344.86	$308,943.22	$110,595.00	$328,769.00
Percentage of expenditure to earnings	169.50	104.10	148.50	107.19
Expenditure per open mile	$6,072.69	$5,106.49	$5,530.00	$5,479.00
Expenditure per train-mile	$2.67	$2.25	$2.03	$2.16
Net deficit	$46,063.97	$12,156.36	$36,120.00	$22,063.00

TRAFFIC STATISTICS

The following table is a comparative statement of freight traffic for the calendar years 1922 and 1923:

Traffic	1922	1923	Traffic	1922	1923
EAST COAST RAILWAY			EAST COAST RAILWAY—con.		
Outward:	*Tons*	*Tons*	Inward—Continued.	*Tons*	*Tons*
Coal	5,408	4,879	Rice	4,615	2,725
Lime, manure	1,205	2,304	Paddy	1,122	579
Shop goods	8,199	7,812	Provisions	314	189
Building materials	1,314	2,163	Sundries	3,314	6,152
Wood	19,491	18,539			
Sundries	1,193	1,812	Total	64,604	64,706
Inward:					
Sugar	17,651	16,375	WEST COAST RAILWAY		
Rum	618	803			
Molascuit	155	369	Sundries	4,738	4,533

Following is a comparative statement of the number of passengers carried for the calendar years 1922 and 1923:

Routes	1922			1923		
	First class	Second class	Total	First class	Second class	Total
East Coast Railway	27,851	261,746	289,597	30,719	341,512	372,231
West Coast Railway	18,804	207,572	226,376	20,654	248,303	268,957
Total	46,655	469,318	515,973	51,373	589,815	641,188
Demerara ferry	74,049	777,958	842.007	76,607	858,774	935,381
Lerguan ferry	1,124	26,126	27,250	1,075	24,849	25,924
Berbice ferry	17,595	185,995	203,590	18,619	182,775	201,394
Suvenaam joint [1]	3,832	27,485	31,317	3,139	26,001	29,140
Adenture joint [1]	104	2,541	2,645	546	6,870	7,416
Adenture direct	1,319	17,425	28,744	1,181	13,290	14,471
Pomeroon service	403	1,869	2,272	496	2,058	2,554
Bartica joint [1]	4,717	34,071	38,788	5,604	49,998	55,602
Bartica direct	1,482	17,183	18,665	1,588	21,855	23,443
Moruka launch	--------	1,199	1,199	13	1,953	1,966
Camaria launch	30	662	692	74	1,517	1,591
Canje launch	3	1,399	1,402	66	1,729	1,795
Northwest service	--------	--------	--------	61	359	420
Total	104,658	1,093,913	1,198,571	109,069	1,192,028	1,301,097
Grand total	151,313	1,563,231	1,714,544	160,442	1,781,843	1,942,285

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[1] Steamer service.

RIGHT OF WAY

Gauge.—The gauge of the East Coast Railway is 4 feet 8½ inches, while that of the West Coast Railway is 3 feet 6 inches.

Ballast.—The road is ballasted with shell and sand throughout.

Ties.—Ties made from the local Mora wood are used exclusively. These ties are not creosoted or treated in any way. The life of the ties is estimated to be six years. The dimensions of ties used on the East Coast Railway are 9 feet by 9 by 4½ inches, while those on the West Coast line are 8 feet by 9 by 4½ inches.

Water.—The water supply for locomotives on the East Coast Berbice Railway is somewhat unsatisfactory, and in periods of long drought special water tanks have to be carried. On the other section the water supply is satisfactory.

Bridges.—The bridges are in good condition.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock on the road for the calendar year ended December 30, 1924, were as follows:

Rolling stock	East coast	West coast	Rolling stock	East coast	West coast
Locomotives	10	4	Cattle wagons	8	--------
First-class bogie composite	2	2	Six-ton open wagons	225	10
First-class three-axle	3	--------	Eight-ton open wagons	--------	20
First-class two-axle	1	--------	Boiler trucks	2	--------
Second-class bogie	2	7	Covered bogie (goods wagons)	2	--------
Second-class three-axle	11	--------	Timber trucks	2	2
Passenger bogie vans	2	2	Open bogie (coal wagon)	1	--------
Goods bogie vans	1	--------	Bogie frame wagon	1	--------
Two-axle vans	4	--------			
Lunatic van	1	--------	Total	280	47
Horse boxes	2	--------			

The steamship services operated in connection with the railways by the transport department had the following fleet for the calendar year ended December 31, 1924:

Names	Length		Beam		Tonnage	Draft		Passenger capacity	Indicated horsepower
STEAMERS	*Ft.*	*In.*	*Ft.*	*In.*		*Ft.*	*In.*		
Queriman	134	0	37	8	380			650	800.
Arapaima	107	0	23	0	140			365	350.
Arawana	107	0	23	0	140			365	350.
Baiara	107	0	23	0	140			365	350.
Haimara	107	0	23	0	140			365	350.
Lukanani	107	0	23	0	140			365	350.
Pirai	107	0	23	0	140			365	350.
MOTOR BARGE									
Paku	80	0	23	0	100			200	2-50 Kelvin.
LAUNCHES									
Canji	50	9	11	0		4	6	60	26 Kromhout.
Moruka	40	0	7	6		3	0	30	26 Kelvin.
Cuyuni	26	0	7	0		3	0	15	26 Kelvin.
Abary	41	6	7	0		4	6	25	15 Metz & Weiss.
Madewini	40	0	8	0		4	0	30	26 Kelvin.

The repair shop for both railways and steamers is located at Georgetown. This shop consists of a sawmill.

ESSEQUIBO RAILWAY

(SPROSTON'S (LTD.) RAILWAY)

The history of this railroad dates back to Ordinance No. 14 of 1896, when authorization was granted to the Sproston's Dock & Foundry Co., of Georgetown, British Guiana, to construct a meter-gauge railroad 18½ miles from Wismar, a town about 65 miles south of Georgetown, on the west bank of the Demerara River, to Rockstone, on the east bank of the Essequibo River. The British Government loaned the Sproston's Co. $200,000, without interest, payable in 15 annual installments, to build this road. This loan was secured by mortgage on the Sproston's Co. steamers and the railway.

This road, which is privately owned, is used as a connecting link to the diamond fields and as a logging road. The line expedites traffic, which otherwise would be handicapped by the rapids on the lower Essequibo River.

The road is operated by the Sproston's Co. (Ltd.), and purchases are made by the manager, who should be addressed in care of the company at Wismar.

On June 30, 1925, the road had the following motive power and rolling stock in operation: Locomotives, 5; box cars, 2; flat cars, 31; caboose cars, 1; other cars, 18.

BLAIRMONT AND PORT MOURANT "CENTRALS"

There are two "sugar-central" railroads in British Guiana—one at the Blairmont sugar plantation and the other at the Port Mourant plantation. The railroad at Blairmont is 4 miles long. It is used for carrying the workers from the central settlements to the outlying fields. The plantation owns two 7-ton gas locomotives and a number of open cars. All the equipment for this line was purchased in the United States.

On the Port Mourant plantation there is 5 miles of light railway used also for carrying workers to the fields. The locomotives used on this line are of the 12-ton Fowler type. The equipment was purchased in Great Britain.

Light railways are not used in British Guiana for carrying cane to the mills. The sugar plantations are in the low-lying land along the coast. Much of this land is below sea level. The sea is kept out by means of the sea wall extending along the coast. Because of the heavy rainfalls it is necessary to have extensive canals for drainage purposes. The sugar on all the plantations is carried in small punts or steel barges on the canals. These punts are usually drawn by oxen or mules.

Purchases for the above roads are made by the manager, who should be addressed in care of the company at Blairmont or Port Mourant.

RAILWAY TO DIAMOND FIELDS (PROPOSED)

On November 20, 1924, the Governor of British Guiana mentioned in his report to the court that it was necessary to construct a road running from a navigable port on the Atlantic Ocean to the diamond fields. Various proposals for the construction of a railway are being considered. At the present time the field is narrowed down to the following five routes:

(*a*) Between Bartika, on the Essequibo, and Tiboku Fall, on the Mazaruni, via the Bartika-Kaburi Road, 145½ miles.

(*b*) Between Bartika and Turesi Fall, via the Bartika-Kaburi Road, 92 miles.

(*c*) Between Bartika and Turesi Fall, along right bank of Mazaruni, 76 miles.

(*d*) Between Kartabu Point, at the junction of the Mazaruni and Cuyuni Rivers, and Turesi Fall, 84 miles.

(*e*) Between Rockstone, on the Essequibo River, and Turesi Fall, 92 miles.

All of these routes have their own adherents, and at the present time it is not known which one will be constructed. Information on this proposed construction can be obtained by addressing Hon. G. D. Bayley, Commissioner of Lands and Mines, Georgetown, British Guiana.

It is understood that on April 1, 1926, the governor of the colony called a special session of the combined court of British Guiana for the purpose of discussing the various proposals for the construction of this railway. As of May 1, 1926, no action had been taken.

FRENCH GUIANA

Communication in French Guiana, as in the other two, is principally by water. What few roads there are are generally poor. The country has more than 15 navigable rivers, together with small streams, tributaries, and canals, which offer excellent communications. There is one railroad in the colony, which is not necessary as an artery of transportation. It is owned by the penal settlement of Chanteirs Chavians and connects St. Laurent de Maroni with St. Jean, a distance of 12 kilometers. The road is of 60-centimeter gauge, Decauville track. The line has two or three wood-burning locomotives, but they are rarely used; since the line is a prison line running to the penitentiary at St. Jean, the prisoners are made to push or propel the cars. Very few passengers and little freight are carried. All the equipment was purchased in France. Purchases of equipment are recommended by the administration of the settlement and made through the French Government.

DUTCH GUIANA

Transportation facilities in Dutch Guiana are afforded for the most part by roads and waterways. Waterways are the most common means of transportation. Rivers form the principal arteries of communication between the various settlements, but, unfortunately, traffic is often interrupted by reason of the droughts. In addition to rivers there is a network of creeks and canals, so that practically all settlements are independent (so far as transportation is concerned) of both railroads and roads. The roads are few and far between.

The only railroad line in the Province is the Lawa Railroad, which runs 107 miles from Paramaribo via Macami, a small settlement on the Surinam River, at which point a crossing is made by means of a cable ferry, and the railroad continues southward on the right bank of the river to its terminus at Dam. This line is owned and operated by the colonial government. Purchases for the road are made by the general manager, who should be addressed in care of the road at Paramaribo. No time-table exists, the train leaving Paramaribo once a week and returning from Dam the following day. As of January 1, 1922, the road had a gross revenue of 211,966.46 francs and operating expenses of 435,524.70 francs. The road carried during the same period 6,192 tons of freight and 117,996 passengers. The ton-kilometers were 343,112,131, its passenger-kilometers 3,499,928, and its locomotive mileage 161,900. The principal traffic moving over the road consists of supplies and ores in connection with the gold fields, through which district the road runs. The road is of 1-meter gauge. Its clearance is limited by 2 meters in width, 0.9 meter in height, and 10 meters in length, while its loading capacity is 12 tons. At the present time the road has 11 locomotives, 54 freight cars, and 19 passenger cars. All equipment is repaired in the shops, which employ 73 men when working at capacity.

PARAGUAY

GENERAL CHARACTERISTICS

The Republic of Paraguay, one of the two inland countries of South America, has an area of 196,000 square miles and a population estimated at 1,000,000. The climate is subtropical. Most of the products of the tropical and temperate zones are successfully cultivated. The plains of the Chaco offer excellent pasturage for cattle, while the mountain slopes are covered with many useful woods and medicinal plants. Beef products, quebracho wood, and yerba mate are the principal articles of export.

Communications throughout the country are poor. Railroads are few, there being but one of any importance in the country, namely, the Paraguayan Central Railway, which runs from Asuncion to the Argentine boundary, connecting at this point with the Argentine Railway system. In addition, there are a number of railways operated in connection with industrial enterprises. Altogether, Paraguay has 517 miles of steam railways in operation and proposes to construct an additional 145 miles.

Asuncion has the only tramway in operation in the country. This tramway operates 17 miles by electricity, 7 miles by steam, and 2 miles by animal power.

Transportation in this country is largely dependent on waterways, which are sufficiently numerous to bring the communication system to a higher level than that of certain other South American countries.

At the present time freight rates are exceedingly high and only recently, in the case of the Paraguay Central Railway, have been increased again. There is much agitation at the present time for the Government to intervene on behalf of the country. Under the general railroad law of 1907 the Government is not allowed to intervene so far as the fixing of railroad rates is concerned, except when the company's dividends exceed 6 per cent of its capital. In the present instance the Paraguay Central Railway has not attempted to fix its capitalization since the losses which it incurred during the last revolution. Consequently, there is no way of determining whether the company has a legitimate cause for the increase in rates that it has put into effect.

PARAGUAY CENTRAL RAILWAY

SURVEY OF DEVELOPMENT

The Paraguay Central Railway Co. (Ltd.), one of the oldest roads in South America, dates its history back to 1854, when surveys for its construction were made by engineers obtained from England by the Government under President Carlos Solano Lopez. These engineers were also to take charge of the main line, which was to run to the Argentine border. Under this arrangement the first section was opened to Trinidad in September, 1861, and continued during the same year to Paraguari, a distance of 44.7 miles.

Because of the unsettled condition of the country and the war which occurred about that time, all construction came to a standstill, and it was not until 1884 that a contract was made with Señor Luis

Patri to extend the railway to the town of Villa Rica, 93.2 miles from Asuncion. This section was opened to traffic in 1886. On September 22, 1887, a law was passed authorizing the Government to sell the line on condition that the purchaser extend it. Another contract was made later with Perry, Cutbill & Co., of London, to extend the railway to Encarnacion, on the Paraguay River opposite Posadas, Argentina. This firm went into bankruptcy when only 62.1 miles had been completed, the road stopping about 3.1 miles from the Pirapo River.

On February 11, 1889, the Paraguay Central Railway Co. (Ltd.) was organized in England to acquire from the Paraguayan Government the railway from Asuncion to Paraguari and the line from Paraguari to Villa Rica (then under construction and completed December 25, 1889) and to construct a railway from Villa Rica to Villa Encarnacion, on the Parana River. The Government guaranteed for 20 years 6 per cent per annum on the purchase price of $2,100,000 (£420,000) per kilometer extended beyond Encarnacion, the working expenses for the purpose of the guaranty being fixed at 65 per cent of the gross receipts. The line is to belong to the company in perpetuity, there being no option for Government purchase.

Difficulties with the Government arose and the guaranty fell into arrears. For several years negotiations were carried on with the Government for a settlement of arrears and other matters, and an agreement between the Paraguayan executive and the company's representative was confirmed by the Congress and became a law by a decree of July 20, 1907. Under this agreement the company surrendered all claims against the Goverment in respect to the guaranty, while the Government gave up £210,000 of preference shares in the company and granted a concession for feeder lines, freedom within certain limits as to tariff, and complete exoneration from all taxes of whatever nature for a term of 25 years. The company immediately undertook construction of the line from the existing limit to Encarnacion.

In connection with the new arrangements with the Government it was decided to reconstruct the company's capital, and for this purpose the company was placed in voluntary liquidation. All proceedings of this character were halted in February, 1908. The arrangement of the capital involved the cancellation of the £120,000 preference shares formerly held by the Government, the issue to holders of old debenture stock of 125 per cent of new debenture stock to cover principal and arrears of interest, and the creation of 6 per cent prior lien debenture stock to an amount not exceeding £600,000 to provide the money properly to equip the line with rolling stock, to complete the line to Encarnacion, and to build the feeder lines.

In 1909 the Government agreed to the company's changing the gauge of its lines to conform with that of the Argentine North Eastern and the Entre Rios Railway, thus completing the through route to Buenos Aires. The authorized capital was further increased (by £290,000) to £562,930, the new shares ranking equally with the old, except that as regards 22,000 shares there are no voting rights. The Argentine Government agreed to subscribe at par for the 22,000 nonvoting shares, and also to purchase the company's rolling stock which was rendered obsolete by the change of gauge. The remaining 7,000 new shares were issued fully paid to the contractors in part

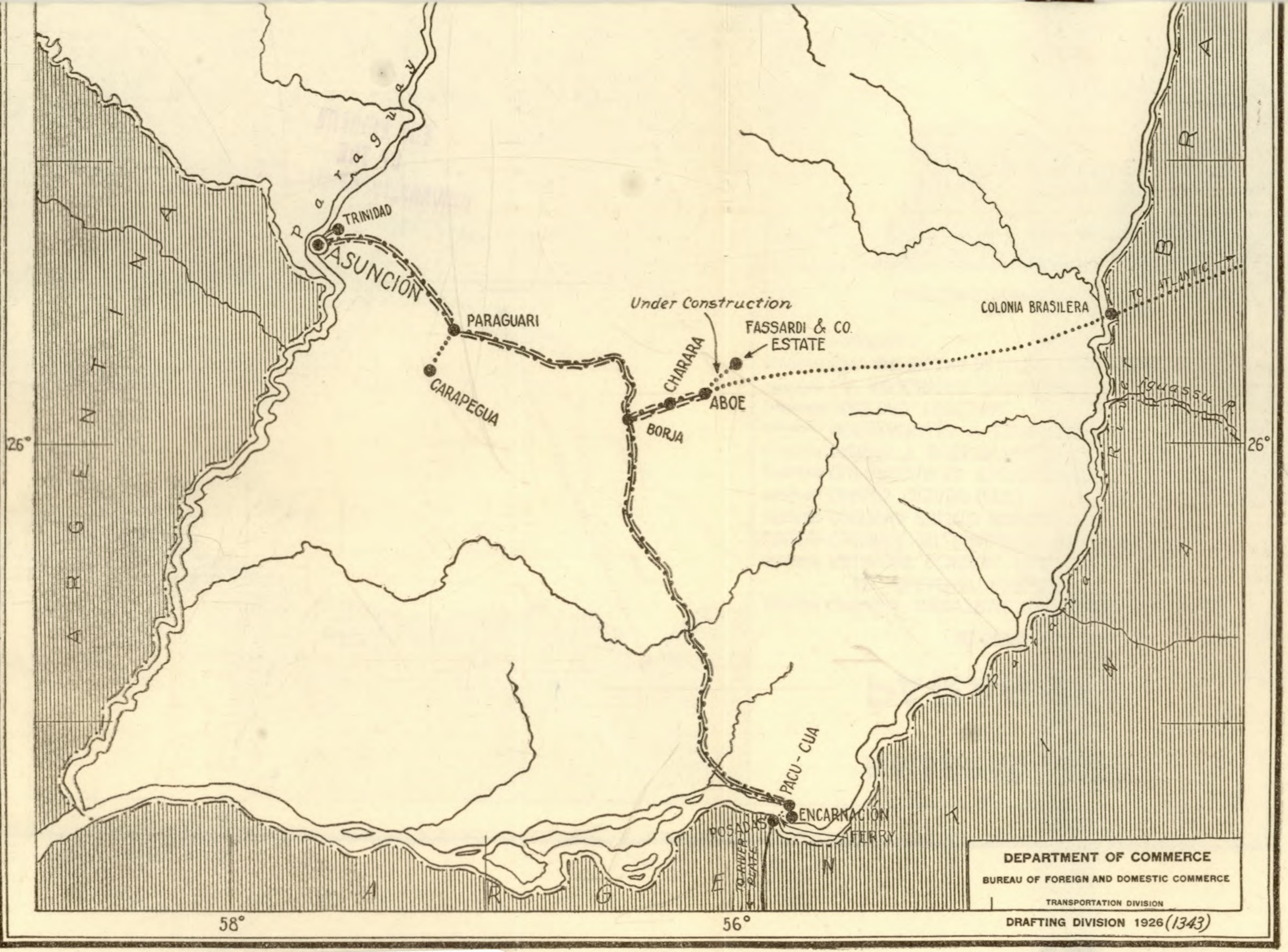

FIG. 8

104289°—27. (Face p. 168.)

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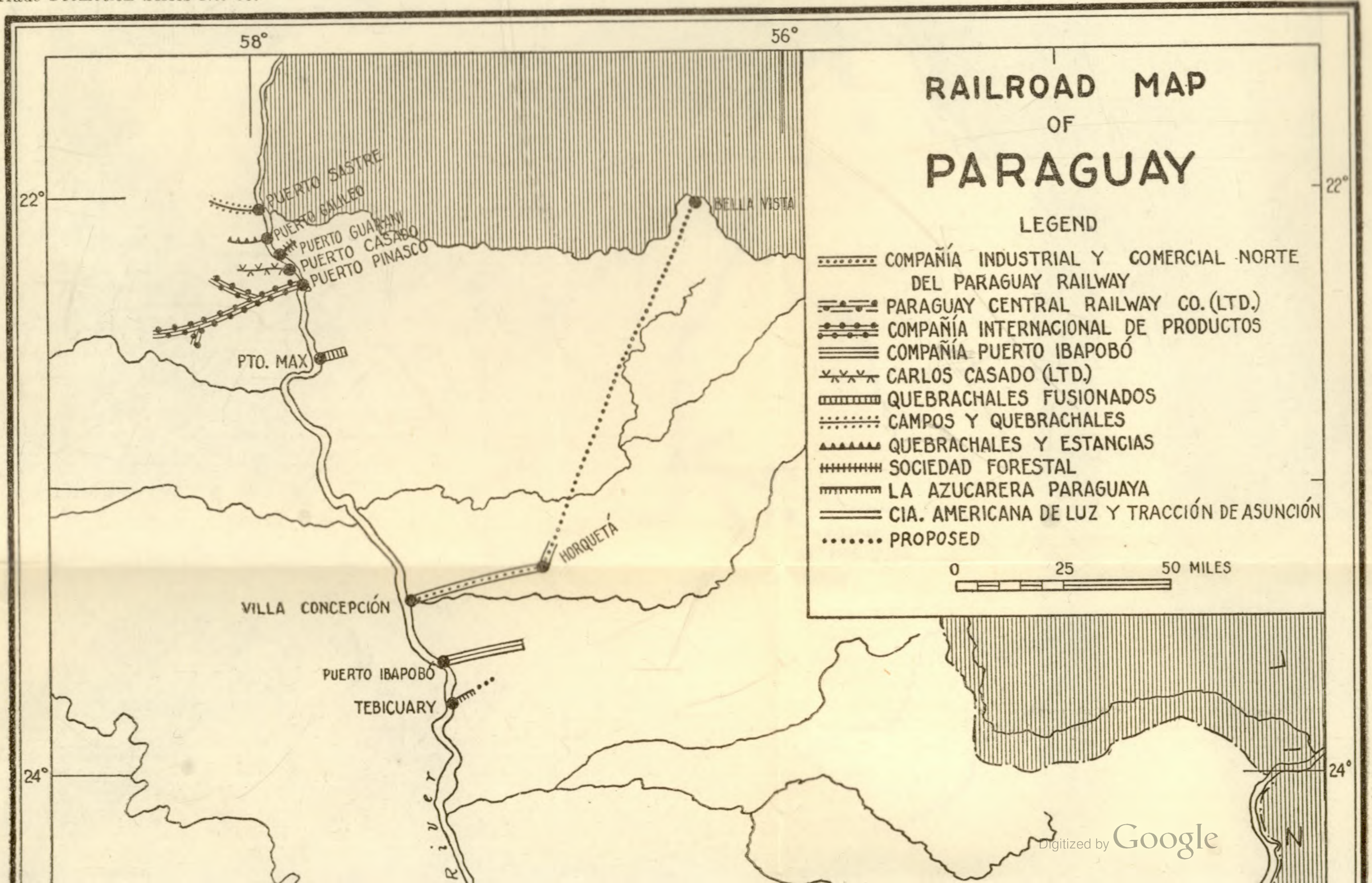
RAILROAD MAP
OF
PARAGUAY
LEGEND
COMPAÑÍA INDUSTRIAL Y COMERCIAL NORTE DEL PARAGUAY RAILWAY
PARAGUAY CENTRAL RAILWAY CO. (LTD.)
COMPAÑÍA INTERNACIONAL DE PRODUCTOS
COMPAÑÍA PUERTO IBAPOBÓ
CARLOS CASADO (LTD.)
QUEBRACHALES FUSIONADOS
CAMPOS Y QUEBRACHALES
QUEBRACHALES Y ESTANCIAS
SOCIEDAD FORESTAL
LA AZUCARERA PARAGUAYA
CIA. AMERICANA DE LUZ Y TRACCIÓN DE ASUNCIÓN
PROPOSED
0
25
50 MILES
58°
56°
22°
22°
24°
24°
PUERTO SASTRE
PUERTO GALILEO
PUERTO GUARANI
PUERTO CASADO
PUERTO PINASCO
BELLA VISTA
PTO. MAX
HORQUETÁ
VILLA CONCEPCIÓN
PUERTO IBAPOBÓ
TEBICUARY
River
N

payment for work done in connection with the extension. For the construction of two extensions, one east from Borja to Iguazu and the other west from Paraguari to Carapegua; to meet any balance due on change of gauge and through route account; and for the electrification of the Asuncion Tramway, 6 per cent notes for £500,000 were issued, but have since been redeemed.

The extension to Encarnacion was opened to traffic July 1, 1911, and the change of gauge was effected by April, 1911. The eastern extension was opened to traffic as far as Charara (19.2 miles) on March 15, 1914. This branch, when completed, will connect with the Brazilian railways to Sao Francisco, on the Atlantic. During 1914 an extension was built from Encarnacion to Pacu-cua, where a dock and ferry slip were constructed. The same facilities were provided for Posadas. Entire trains are thus taken across the Parana River by ferryboats built especially for the purpose, making possible through service to Buenos Aires. Construction on the western section is at present halted.

The Paraguay Central Railway Co. also owned a concession from the National Government for a tramway in Asuncion, about 26 miles long, of which 17 miles are operated by electricity, 7 by steam, and 2 by mules. This concession included the public and private supply of electricity for lighting, but the concession was transferred to the Asuncion Tramway, Light & Power Co. (Ltd.), which is now in liquidation. The bulk of the capital formerly held by the Paraguay Central was disposed of in 1918.

In July, 1914, a scheme was presented for funding the floating indebtedness of the company, including the 6 per cent notes for £500,000, but in consequence of financial conditions resulting from the war it was found impossible to carry out the proposed plan. The company defaulted in regard to interest payments and the repayment of the principal of the 6 per cent notes, and again defaulted in January, 1915, in the payment of interest on the prior-lien debenture stock. In October, 1914, B. H. Binder, one of the directors, was appointed receiver on behalf of the holders of the prior-lien debenture stock and the 6 per cent notes, but was discharged in December, 1918, a further scheme for reorganization having been approved by the secured and unsecured creditors in November and subsequently carried into effect. The main provisions of the schemes were as follows:

1. To pay two years' arrears of interest on the prior-lien debenture stock, representing the interest which accrued due on July 15, 1915, and July 15, 1916, in cash, amounting to £54,000, after deduction of income tax.
2. The company to be at liberty from time to time to increase the existing issue of £600,000 prior-lien debenture stock by a further £150,000, but so that such increased amount should be issued only to provide for future improvements and other matters of like nature.
3. To create issues of (*a*) £250,000 "A" debenture stock with power to increase such issue up to £400,000 carrying interest at 7 per cent per annum from January 1, 1919; (*b*) £300,000 "B" income debenture stock, carrying interest at 7 per cent per annum from January 1, 1919; and (*c*) £88,310 "C" income debenture stock carrying interest at 6 per cent per annum from January 1, 1919.
4. The holders of the £500,000 6 per cent three-year notes to waive all claims for interest in arrear, and accept in full satisfaction of their principal £35,000 5 per cent war loan, £250,000 of the said "A" debenture stock, and £300,000 of the said "B" income debenture stock.

5. The unsecured creditors whose claims were individually under £1,000 each to be paid in cash, in full satisfaction of their claims, such sums as may be agreed with them respectively, and the other unsecured creditors of the company to be paid and satisfied by the issue to them at par of " C " income debenture stock to the total nominal amount of their respective debts for principal and interest to December 31, 1918.

6. The principal of the 5 per cent debenture stock (to be called " D " income debenture stock) to be reduced by 20 per cent, but the rate of interest payable to be increased as from January 1, 1919, to 6¼ per cent per annum, payable only out of net revenue.

According to the Stock Exchange Yearbook for June 30, 1925, the company has an authorized issued and paid-up capital of £562,930. The outstanding capital is made up as follows:

Five hundred and sixty-two thousand three hundred and ninety pounds sterling ordinary shares of £10, fully paid, being the total authorized, including 22,000 nonvoting shares subscribed for by the Argentine Government at par in 1909 in connection with the conversion of the gauge of the railways. The Argentine Government shares confer the right to nominate one director, and the other shareholders will have the right to elect one director as soon as the " B " stockholders nominate only one and three directors as soon as the " D " stockholders nominate only one (see below).

Six hundred thousand pounds sterling 6 per cent prior-lien debenture stock—£210,000 sold in June, 1908, at 89; £200,000 in February, 1909, at 91; and £100,000 during 1910; and £90,000 allotted during 1911; credited as fully paid. The total authorized is £750,000. Interest is payable January 15 and July 15, and the stock is redeemable at any time, at the company's option, in whole or in part, on three months' notice, but there is no fixed date for redemption; the stock is secured by a first floating charge on the undertaking, both present and future, and the company may not, without the consent of the stockholders, create any mortgage or charge on its assets to rank pari passu with, or in priority to, the stock. Interest due January 15 and July 15, 1915 and 1916, was paid January 16, 1919, in accordance with the scheme of reorganization; that due January, 1917, was met in February, 1917; and that due July, 1917, and since at due dates. Trustees: G. Grinnell-Milne, A. G. Gumpert.

Two hundred and fifty thousand pounds sterling 7 per cent "A" debenture stock. Authorized £400,000. Interest January 15 and July 15. Redeemable at par on three months' notice from company. Secured by trust deed as second floating charge on undertaking and property, including uncalled capital; trustee, Law Debenture Corporation (Ltd.). Full interest in cash duly paid; holders had right to nominate one director until full interest had been paid for three successive years and all arrears (if any) discharged.

Three hundred thousand pounds sterling " B " income debenture stock; cumulative interest at 6½ (formerly 7) per cent is payable only out of net revenue available after provision for all prior charges. Authorized, £300,000. Redeemable at par at any time on three months' notice; secured by a third floating charge on the undertaking and property, including the uncalled capital; trustee, Law Debenture Corporation (Ltd.). Holders of " B " stock had the right to nominate two directors until the right of the "A" stockholders to nominate one director expired; " B " stockholders are now entitled to nominate three directors until their interest has been paid in cash for five successive years and all arrears are discharged, when they will have the right to nominate one director until the " D " debenture holders have received interest in cash for three successive years. Interest three and a half years to 1921–22, 7 per cent per annum; two years to 1923–24, 6½ (paid out of 1923–24 profits).

Eighty-one thousand six hundred and fourteen pounds sterling " C " income debenture stock; cumulative interest at 6 per cent is payable only out of net revenue available after meeting interest on the " B " income debenture stock. A sinking fund of 2 per cent per annum is to be provided out of the net revenue ultimately available in each year and to be applied by purchase or by tender under par or by drawings at par. This contribution of 2 per cent per annum is noncumulative against revenue, but the interest attributable to any " C " debenture stock redeemed or purchased is to be added to sinking fund and applied as part thereof. The stock is secured by a fourth floating charge on the undertaking and property, including the uncalled capital; trustee, Law Debenture Corporation (Ltd.). Full interest for two and a half years to 1920–21; nil for two years 1922–23; 4½ per cent for 1923–24; leaving 13½ per cent arrears.

One million forty thousand pounds sterling 6¼ (formerly 5) per cent "D" income debenture stock, reduced amount, under the terms of the 1918 scheme of arrangement, of £1,300,000, of which £1,267,500 was issued against principal and arrears of interest—the latter amounting to 80 per cent on November 1, 1907—of old 5 per cent debenture stock for £1,014,000, at the rate of £125 of new stock for every £100 of old. Interest on the "D" stock is contingent on the earnings of the company until the full amount has been paid for three consecutive years, or until a dividend is distributed on the ordinary shares, and in either of these events interest on the "D" debenture stock is to become cumulative. The stock is redeemable at 125 per cent, at any time after June 30, 1937, at the option of the company, on three months' notice, and is secured as a fifth floating charge on the undertaking and property. Trustees: C. A. Grenfell, J. A. Hislop. This stock received 4½ per cent per annum for the period from February 25 to June 30, 1908, and £1 2s. 5d. per cent for 1908–9; the next payment was 2 per cent in respect of the half year to June 30, 1919; for 1919–20 the full interest was paid; for 1920–21, 4; for three years to 1923–24, nil. "D" stockholders have the right to nominate one director until the "B" stockholders nominate only one director, after which they will be entitled to nominate two directors until full interest has been paid in cash for three successive years, when they will again have the right to nominate one director.

The railway suffered considerable damage as a result of the recent revolution. Although some bridges were destroyed by the rebels at various points on the railroad, especially at or near Paraguari, Ypacarai, and the large bridge over the Tebicuari River, the greatest damage occurred in Asuncion. The railway station in the capital was captured by the rebel forces on July 9, 1923.

It has been reported that the Paraguayan Government is in debt to the railway for 10,000,000 Paraguayan paper pesos for passenger fares and freight and 1,400,000 Argentine gold pesos for damages caused by various revolutions. The Government is paying off its debt of 16,000,000 Paraguayan paper pesos for passenger fares and freight at the rate of 500,000 pesos per month, and on November 1, 1924, had curtailed its obligations to 10,000,000 Paraguayan paper pesos and 1,400,000 Argentine gold pesos.

MILEAGE

At the present time the road has 274 miles of track in operation. This includes 19 miles of sidings and switches with the extension from Borja junction. The main line is operated for a total distance of 235 miles. It is not planned to construct any additional track on the main line at the present time, but on the Borja-to-Iguazu branch approximately 21 miles of track have been laid. A new branch line running from Aboe to a point on the northeast section of the property owned by Fassardi & Cía. is now under construction and will be operated by this company. It has been proposed from time to time to construct a line from Paraguari, on the main line, to Carapegua, a distance of approximately 11.8 miles. In April, 1925, it is understood that Elias Thomas, the general manager of the railway, is in London and will bring the construction of this branch before the board of directors. The line will be of material benefit to farmers and will eliminate the necessity of transportation by bullock wagons. If the branch is constructed it will be of narrow gauge and all materials will be purchased in England.

FINANCES

The capital authorized and issued by the Paraguay Central Railway for the year ended June 30, 1924, is as follows:

Description	Amount authorized			Amount issued and received			Amount redeemed
	Shares	Loans	Total	Shares	Loans	Total	Loans
6 per cent prior lien debenture stock		£750,000	£750,000		£600,000	£600,000	
7 per cent "A" debenture stock		400,000	400,000		250,000	250,000	
6½ per cent "B" income debenture stock		300,000	300,000		300,000	300,000	
6 per cent "C" income debenture stock		88,310	88,310		88,310	88,310	£6,696
6¼ per cent "D" income debenture stock[1]		1,040,000	1,040,000		1,040,000	1,040,000	
Ordinary shares of £10 each	£562,930		562,930	£562,930		562,930	
Total	562,930	2,578,310	3,141,240	562,930	2,278,310	2,841,240	6,696

Description	Amount outstanding			Balance unissued		
	Shares	Loans	Total	Shares	Loans	Total
6 per cent prior lien debenture stock		£600,000	£600,000		£150,000	£150,000
7 per cent "A" debenture stock		250,000	250,000		150,000	150,000
6½ per cent "B" income debenture stock		300,000	300,000			
6 per cent "C" income debenture stock		81,614	81,614			
6¼ per cent "D" income debenture stock[1]		1,040,000	1,040,000			
Ordinary shares of £10 each	£562,930		562,930			
Total	562,930	2,271,614	2,834,544		300,000	300,000

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[1] This stock will, in the event of repayment, be repayable at a premium of 25 per cent.

The receipts and expenditures on the capital account by the Paraguay Central Railway on June 30, 1924, were as follows:

Debit	Amount			Credit	Amount
	£	s.	d.		£
To expenditure:				By receipts as per statement No. 1:	
As per last account	2,814,349	13	1	Ordinary shares	562,930
Deduct—				6 per cent prior lien debenture stock	600,000
Net credits during the year ended June 30, 1924, as per statement No. 3	4,407	1	1	"A" debenture stock	250,000
				"B" income debenture stock	300,000
	2,809,942	12	0	"C" income debenture stock £88,310 Less—Redeemed and cancelled 6,696	81,614
Balance carried to balance sheet No. 6	24,601	8	0	"D" income debenture stock	1,040,000
Total	2,834,544	0	0	Total	2,834,544

A comparison of the balance sheets of the Paraguay Central Railway during the fiscal years ended June 30, 1914 and 1924, appears below. The general balance sheet as of June 30, 1914, is given first:

DEBIT

	£	s.	d.	£	s.	d.
Capital account as per account No. 2				199,632	7	2
Interest on 6 per cent prior-lien debenture stock accrued to date	16,500	0	0			
Interest on 6 per cent three-year notes accrued to date	12,500	0	0			
Unpaid debenture stock interest	50	4	1			
				29,050	4	1

	£	s.	d.	£	s.	d.
Sundry creditors and credit balances:						
London	17,885	14	6			
Paraguay	188,898	6	4			
				206,784	0	10
Renewal account—Balance at credit thereof				5,390	6	3
Bills payable (including £60,000 accepted on behalf of the Asuncion Tramway, Light & Power Co. (Ltd.); see per contra)				140,407	3	7
General reserve account, as at June 30, 1913				16,888	9	11
Total				598,152	11	10

NOTE.—The company is contingently liable under guaranties given in connection with the obligations of the Asuncion Tramway, Light & Power Co. (Ltd.).

CREDIT

	£	s.	d.	£	s.	d.
Cash at bankers:						
Paraguay	7,261	7	11			
Less overdrawn in London	155	13	10			
				7,105	14	1
Stores on hand and in transit				142,935	6	2
Government accounts outstanding				179,768	10	0
Sundry debtors and debit balances:						
London	1,286	7	4			
Paraguay	3,912	18	0			
				5,199	5	4
Asuncion Tramway, Light & Power Co. (Ltd.):						
Net outlay in connection with this company (excluding interest)	215,472	12	9			

NOTE.—In respect of part of the above outlay the company holds 240,000 ordinary shares of £1 each and 100,000 preference shares of £1 each in the tramway company, but the further consideration remains to be determined between the two companies.

	£	s.	d.	£	s.	d.
In respect of bills accepted on the tramway company's behalf (see per contra)	60,000	0	0			
	275,472	12	9			
Deduct—Balance of net revenue account at June 30, 1914, applied to write down the above outlay, toward possible loss in connection therewith (see account No. 5)	13,005	16	6			
				262,466	16	3

NOTE.—A receiver on behalf of the debenture holders of the tramway company was appointed on October 16, 1914.

	£	s.	d.	£	s.	d.
By discount and expenses on issue of three-year notes—Proportion carried forward				677	0	0
Total				598,152	11	10

Following is the general balance sheet of the Paraguay Central Railway as of June 30, 1924:

DEBIT

	£	s.	d.	£	s.	d.
Capital account as per account No. 2				24,601	8	0
Capital reserve account				76,316	17	3
Renewal account				97,125	15	10
General reserve account				9,779	13	2
Interest on 6 per cent prior-lien debenture stock	16,500	0	0			
Interest on "A" debenture stock	8,750	0	0			
Interest on "B" income debenture stock	39,000	0	0			
Interest on "C" income debenture stock	3,672	12	8			
Unclaimed debenture stock interest	122	17	9			
				68,045	10	5

NOTE.—There are arrears of interest of 13½ per cent still outstanding on the "C" income debenture stock.

	£	s.	d.	£	s.	d.
Sinking fund for "C" income debenture stock				5,867	11	2
Sundry creditors and credit balances:						
London	19,709	5	11			
Paraguay (including reserve for Government accounts and bonds, per contra)	320,296	6	1			
				340,005	12	0
Undistributed revenue at credit of—						
"C" income debenture stockholders	197	9	6			
"D" income debenture stockholders	448	2	0			
				645	11	6
Total				622,387	19	4

CREDIT

	£	s.	d.	£	s.	d.
Cash at bankers, in hand, and in transit:						
London	52,364	8	10			
Paraguay	14,273	18	11			
In transit	4,500	0	0			
				71,138	7	9
Investments at cost:						
British Government 3½ per cent conversion loan	159,307	17	8			
British Government 5½ per cent treasury bonds, 1930	30,913	10	0			
Other investments	844	0	0			
				181,065	7	8
Stores in hand and in transit				52,499	19	0
Government accounts outstanding and Government internal bonds received on account thereof				298,129	7	3
Sundry debtors and debit balances:						
London	5,496	7	5			
Paraguay	14,058	10	3			
				19,554	17	8
Total				622,387	19	4

A comparison of the net earnings of the road for pre-war and recent years is as follows:

Items	1913	1914	1921	1922	1923	1924
Passenger revenue	59,936	62,157	71,422	46,369	28,248	54,967
Freight revenue	76,755	74,679	126,513	99,347	72,753	118,435
Sundry receipts	9,820	19,404	34,939	22,390	9,342	27,352
Total	146,511	156,240	232,874	168,106	110,343	200,754

The revenue account of the Paraguay Central Railway for the fiscal year ended June 30, 1924, is as follows:

Items	1923				1924			
	Amount			Per cent of gross receipts	Amount			Per cent of gross receipts
EXPENDITURES	£	s.	d.		£	s.	d.	
Permanent way and works	24,079	18	10	21.82	30,220	12	5	15.05
Locomotive maintenance	4,797	9	2	4.35	7,497	9	11	3.73
Carriage maintenance	1,748	1	8	1.58	4,188	5	11	2.09
Wagon maintenance	3,944	1	6	3.57	7,807	17	4	3.89
Locomotive running	16,986	3	2	15.39	17,933	10	1	8.93
Vehicle running	696	11	1	.63	838	17	9	.42
Traffic expenses	15,455	0	3	14.01	18,258	7	0	9.10
Encarnacion ferry slip	406	5	2	.37	532	11	11	.27
General charges	11,933	6	2	10.82	14,160	19	8	7.05
Miscellaneous expenditure	1,067	0	8	.97	2,150	10	5	1.07
Total expenditure	81,113	17	8	73.51	103,589	2	5	51.60
Balance carried to net revenue account No. 5	29,229	1	9	26.49	97,165	8	10	48.40
Total receipts	110,342	19	5	100.00	200,754	11	3	100.00

Items	1923				1924			
	Amount			Per cent of gross receipts	Amount			Per cent of gross receipts
RECEIPTS	£	s.	d.		£	s.	d.	
Passengers	28,247	11	10	25.60	54,967	7	0	27.38
Special trains	38,489	3	4	34.88	17,681	19	2	8.81
Parcels	9,319	18	4	8.45	10,592	10	4	5.28
Excess luggage	53	2	2	.05	101	13	3	.05
Telegrams	2,699	17	3	2.45	2,933	13	6	1.46
Goods	72,553	2	10	65.75	118,435	0	0	59.00
Warehouse rent	437	8	2	.40	786	19	3	.39
Rents	735	11	10	.67	700	2	4	.35
Sundry receipts	5,667	7	3	5.13	14,601	17	2	7.27
Total	158,203	3	0	143.38	220,801	2	0	109.99
Less—Reserve for Government traffic	47,860	3	7	43.38	20,046	10	9	9.99
	110,342	19	5	100.00	200,754	11	3	100.00

The net revenue account of the Paraguay Central Railway for the year ended June 30, 1924, is as follows:

Debit	Amount			Credit	Amount		
	£	s.	d.		£	s.	d.
Balance brought from previous year	16,754	19	9	Balance brought from revenue account.	97,165	8	10
Difference in exchange	23,952	15	11				
Directors' percentage of profits	1,625	6	8	Arrears of traffic accounts collected from Paraguayan Government.	21,215	5	7
Corporation profits tax	400	0	0				
Interest on prior lien debenture stock at 6 per cent.	36,000	0	0	Interest on Paraguay Government bonds.	8,205	13	1
Interest on "A" debenture stock at 7 per cent.	17,500	0	0	General interest	12,155	11	11
				Sundry receipts	584	19	10
Interest on "B" income debenture stock:				Transfer fees, etc	39	2	6
Arrears for year to June 30, 1923, at 6½ per cent.	19,500	0	0				
For year to June 30, 1924, at 6½ per cent.	19,500	0	0				
Interest on "C" income debenture stock: 4½ per cent on account of arrears for year to June 30, 1922.	3,672	12	8				
Sinking fund for "C" income debenture stock: Interest on redeemed stock, attributable to sinking fund.	301	6	4				
Balance carried to the credit of the "C" income debenture stockholders.	159	0	5				
Total	139,366	1	9	Total	139,366	1	9

TRAFFIC STATISTICS

The following figures show the freight movement over the road during specified fiscal years:

Items	Year ended June 30, 1914	Year ended June 30, 1923	Year ended June 30, 1924
Total tonnage	197,310	179,580	243,029
Ton-mileage	12,809,951	12,044,033	18,253,838
Average haul-miles	63.11	67.07	75.11
Average mixed and passenger trainload (tons)	56.43	58.38	39.49
Average freight trainload (tons)	123.07	126.90	132.97
Average loaded carload (tons)	12.59	15.94	14.01
Average loaded carload (excluding livestock traffic) tons	12.86	16.00	14.15
Loaded freight-car mileage	1,017,201	655,870	1,216,683
Empty freight-car mileage	399,822	339,428	569,721
Train mileage	227,825	130,499	204,505
Engine mileage	366,525	392,356	380,845
Receipts per train-mile	13s. 8½d.	16s. 11d.	19s. 7½d.
Expenses per train-mile	7s. 11½d.	12s. 5¼d.	10s. 1½d.
Balance per train-mile	5s. 9½d.	4s. 5¾d.	9s. 6d.

The following table shows, in long tons, the various commodities carried over the road during the fiscal years indicated:

Commodities	1913	1914	1921	1922	1923	1924
	Tons	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Bricks, stone, lime, and sand	12,580	17,002	11,598	7,486	2,796	6,538
Flour	2,719	3,186	2,639	1,434	779	2,198
Hay	1,980	2,328	2,390	2,036	1,921	1,827
Hides	1,275	6,235	2,131	2,686	2,746	2,701
Maize	2,819	3,295	3,849	3,984	3,503	4,435
Meat	7,119	7,067	6,959	6,889	6,147	1,541
Oranges	2,112	5,187	15,987	22,813	10,351	20,476
Rice, bran, mandioca, and starch	994	1,125	2,567	2,243	2,141	2,857
Sugar, wine, and spirits	3,440	4,046	4,536	3,049	2,730	2,938
Tobacco	5,048	5,987	8,395	6,985	6,833	9,278
Timber, firewood, charcoal, and tanning bark	71,210	59,120	85,183	53,569	48,506	71,112
Wool, hair, bones, and grease	768	720	521	513	495	1,525
Yerba mate	1,086	1,890	2,024	2,137	488	1,972
Sundries	41,821	38,723	52,651	30,319	18,385	25,381
Total	154,971	155,911	201,430	146,143	107,821	154,779

NOTE.—For 1925 the total freight carried amounted to 186,270 tons.

The number of head of livestock carried during the fiscal years indicated:

	1913	1914	1921	1922	1923	1924
Cattle	5,554	10,048	3,600	1,153	1,107	1,226
Other	5,065	4,049	2,635	570	647	2,019
Total	10,619	14,097	6,235	1,723	1,754	3,245

The passengers carried during the fiscal years ended June 30, 1913, 1914, 1921, 1922, 1923, 1924, and 1925 numbered 532,807, 623,368, 512,383, 378,518, 201,868, 408,463, and 478,560, respectively.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the fiscal year ended June 30, 1924, were as follows:

B. H. Binder, chairman of the board, 80 Bishopsgate, London, E. C. 2.
Victor V. Branford, director, 80 Bishopsgate, London, E. C. 2.
Maj. G. O. S. Pringle, director, 80 Bishopsgate, London, E. C. 2.
Sir Miles W. Mattinson, K. C., director, 80 Bishopsgate, London, E C. 2.
J. B. Vignauz, secretary, 80 Bishopsgate, London, E. C. 2.
Elias Thomas, general manager and chief engineer, Asuncion, Paraguay.
N. W. Stocks, secretary to the general manager, Asuncion.
Maj. T. S. Butler, resident engineer, Sapucay, Paraguay.
E. G. Kent, general accountant, Asuncion.
W. Pride, chief of operations and storekeeper, Asuncion.
A. Giani, workshop superintendent, Sapucay.

Major purchases are made through the company's office. Minor purchases are made by the general manager, at Asuncion, through W. Pride, storekeeper and chief of operations.

RIGHT OF WAY

Altitude.—The road runs from 296 feet to 630 feet above sea level.

Gauge.—The gauge of the road is 4 feet 8½ inches.

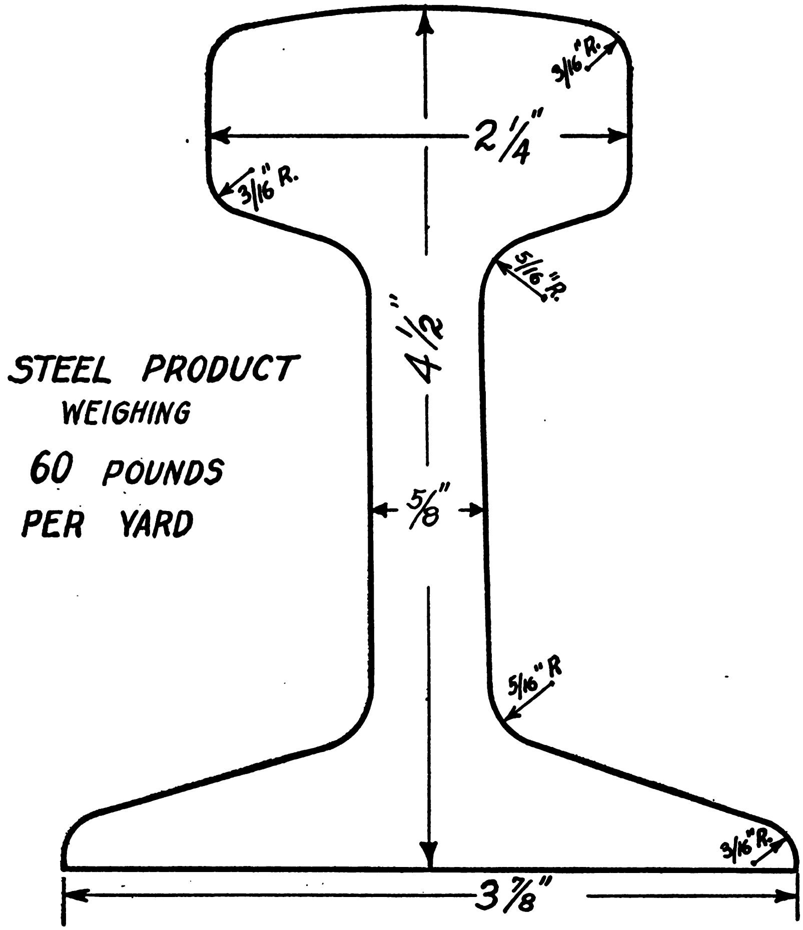
Grades.—The maximum grade is 2 per cent in 328 feet (100 meters), for a distance of 1,805 feet between Encarnacion and Pacu-cua.

Curves.—The radius of the maximum curve on the road is 4,593 feet.

Ballast.—Earth and stone ballast is used.

Ties.—Native ties of urunday-me, curupay, lapacho, and tatayibo hardwoods, 2.70 by 0.25 by 0.13 meters, spaced from 1,200 to 1,300 to the kilometer, are used on the road.

Rails.—Rails of 60 pounds and 29.5 feet in length are used on the road. Figure 9 is a diagram of the profile of the rail:



RAIL USED BY THE
CENTRAL PARAGUAY RAILWAY

FIG. 9

Water.—Water is secured from rivers, streams, and wells. Water stations are located every 10 miles. The tanks are made largely from wrought or cast iron plates of English manufacture, while some are of Paraguayan hardwoods.

Fuel.—Wood, obtained locally, is used as fuel. The supply is brought to stations or placed alongside tracks. At present there are no plans for electrifying the road.

Signaling equipment.—There are no automatic signals, only flags and lamps being used.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate as heavy traffic as they were designed to carry.

Bridges.—There are 16 bridges on the railway, as follows:

Location	Length	Class
	Feet	
M. 16	95	Brick and wood.
Yaguire	200	Hardwood.
Pirayu	72	Do.
Teherary	725	Do.
Tacuari	98	Do.
C. Pisehondo	75.5	Do.
Ypacarai	265.7	Do.
Ypacaguazu	232.9	Do.
Hermandafia	111.5	Do.
Pirapo	1,049.8	Steel.
Do.		Do.
Tebueriry	639.7	Do.
Do.		Do.
Tacari	311	Do.
Do.		Do.
San Martin	147	Do.
Caragueta		Do.
Yhu	656	Do.
Mboicae	213	Do.

Tunnels.—There are no tunnels on the line.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock on the road for the fiscal year ended June 30, 1924, are shown below. The locomotives were as follows:

Mixed traffic engines	11
Mixed cargo	4
Tank locomotives	6
Shunting engines	3
Total	24

All the locomotives are of 2–6–0 type, with double bogie tenders; diameter of wheels, 4 feet 6½ inches; working pressure, 180 pounds, and 18-inch cylinders; cost, £3,810 sterling, delivered in Asuncion. All the locomotives are of British manufacture. Following is a list of the rolling stock:

Sleeping coaches	4
Day coaches:	
First class	10
First and second class	4
Dining cars	4
Mixed cars	4
Box cars:	
Iron sides	100
Wooden sides	130
Half-box cars	50
Cattle cars	30
Timber cars	84
Low-side cars	11
Firewood cars	10
Mixed freight cars	8
Sugar-cane cars	43
Passenger cabooses	4
Freight cabooses	9
Total	505

Cars, with the exception of the sugar-cane and caboose types, are equipped with bogie-type couplers; the other two classes are the two-axle type.

There is only one repair shop on the road, located at Sapucay, about 27 miles from Asuncion. The shop, when working to capacity, employs 200 men and can handle a casting of 1 metric ton.

FERROCARRIL DEL NORTE

The Ferrocarril del Norte dates its history back to 1909, when the Paraguayan Government granted a concession, valid for 50 years, for the construction of a road to run from Concepcion into the interior of Concepcion district to the sawmills owned by the firm of Guggiari, Gaona y Cía, a few kilometers past Horqueta. The line was completed in 1910 and was taken over at that time by the Compañía Industrial y Comercial Norte del Paraguay, which company is controlled by a combination of interests represented by Guggiari, Gaona y Cía. and Basilio Quevado, a wealthy landowner in Paraguay. On July 8, 1915, the company received a further concession from the Government which authorized the extension of the line from Horqueta to Pedro Juan Caballero and Bella Vista, on the Brazilian frontier, a distance of approximately 128 miles from Horqueta. This concession was valid for 40 years. Up to date only 7 miles have been constructed, which work was done in 1920. At the present time there is no actual construction work on this part of the concession. The road at the present time is 33 miles in length. One freight train is run daily from Concepcion to Horqueta and return. Passenger trains are run three times weekly.

The operating officials of the road for the fiscal year ended June 30, 1924, are as follows (the address of all being "Banco Mercantil del Paraguay, Concepcion"):

President, Benjamin Banks.
Vice president, Basilio Quevado.
Secretary, Emilio Gomez de la Fuente.
Directors—
    Manuel Bedoya.
    Jose C. Guggiari.
    Blas Aquino.
    Hernando Isnardi.
    Emilio Gomez de la Fuente.

Purchases are made directly by the company at Concepcion.

Financial information as to the road's condition is not available. It is understood, however, that revenues do not amount to a sum sufficient to pay the 12 per cent interest on the loans contracted with the Banco Mercantil del Paraguay.

No traffic statistics are available.

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade on the road is 1½ per cent for a distance of 26 miles.

Curves.—The radius of the maximum curve is 984 feet.

Ballast.—Earth is used as ballast.

Ties.—The ties are of native woods, usually of curupay, urunday, or lapacho. They are 200 centimeters long, 10 centimeters high, and 20 centimeters wide. From Concepcion the ties are spaced 12 to every 30 feet and from Horqueta 13 to every 30 feet.

Rails.—Steel rails 30 feet long and weighing 15 kilos to the meter are used on the road.

Water.—Water stations are located at Concepcion, Rincon, and Arroyo Care, from 16 to 49 kilometers apart. In Concepcion the railway has a water tank with a capacity of 12,000 liters, supplied from a well by an electric pump; at Rincon there is a tank of 9,000 liters, supplied from a well by a windmill. At Arroyo Care a water deposit is being constructed with a capacity of 100,000 liters. The deposit is 10 feet from the ground.

Fuel.—Wood obtained locally is used as fuel. The wood is cut to a length of 4 feet, and for the round trip, Concepcion to Horqueta and return, about 2,500 pieces are burned. At present there are no plans for change in fuel.

Maintenance.—The road is kept in sufficiently good repair to accommodate as heavy traffic as it was designed to carry.

Signaling equipment.—No signaling equipment is used on the road.

Bridges.—There are four bridges on the road, three of which are of wood and one of cement, 66 feet long, over the Care River.

Tunnels.—There are no tunnels on the road.

This road had the following motive power and rolling stock in operation during the fiscal year ended June 30, 1924:

Locomotives:	
40 horsepower	1
70 horsepower	2
60 horsepower	1
150 horsepower	1
Total	5
Cars:	
Passenger cars	2
Closed passenger car	1
Freight cars for hauling wood	11
Steel freight cars for heavy transport	33
Baggage cars	2
Tank cars for water	4
Total	53

There is one repair shop, located at Concepcion. It is understood that two locomotives can be repaired at one time, if necessary. Practically all of the rolling stock is of German manufacture and of antique style.

NEW RAILROAD PROJECTED FROM ARGENTINA TO PARAGUAY

Señor Ezequiel Eamos, of Buenos Aires, representative of the Nor Este Argentina Railway, has presented to the Paraguayan Government a project for the construction of a railway from Leis, in Argentina, a few miles below Encarnacion, to Puerto Aguirre, which is situated at the conjunction of the three nations, Argentina, Brazil, and Paraguay, a point at the junction of the Parana and Yguazu Rivers.

The construction of such a line of railway would open up transportation facilities of great value to that part of Paraguay known as Misiones, rich in valuable timber and yerba mate groves.

The Argentine Government has approved the project as it affects Argentina, and it is now presented for the approval of the Paraguayan Government [March 18, 1926].

ASUNCION TRAMWAY

(COMPAÑÍA AMERICANA DE LUZ Y TRACCIÓN DE ASUNCION)

SURVEY OF DEVELOPMENT

The history of this tramway dates back to May 1, 1871, when a concession was granted to Diego Horroks & Cía. for the construction of a line of 4-foot 8½-inch gauge. Within 60 days after the concession was granted the line was constructed and opened to traffic with mules and horses between the port of Asuncion and the station of the Paraguay Central Railway, a distance of approximately 1½ kilometers. The line was operated by the Compañía de Tramways de la Ciudad de Asuncion. On August 26, 1884, a concession was granted to Francisco Morra, who purchased the line to the railroad station and continued the horse traction to Villa Morra via La Recoleta, about 6 kilometers from the port. Apparently the tramway service was a paying enterprise, since on the same day that the concession was granted to Francisco Morra, August 26, 1884, permission was given to a group headed by Pacifico de Vargas and Sinforiano Alcorta to construct a tramway between the port and Cancha Sociedad, about 3 kilometers. As a guaranty that the service to Cancha Sociedad would be available to the public within two years from August 26, 1884, the sum of 3,000 Paraguayan pesos was deposited with the Government. This latter line of 4-foot 8½-inch gauge, horse traction, was opened to the public in the Paraguayan autumn of 1886 and was continued to Trinidad, approximately 10 kilometers from the port, about 1890.

Early in 1890 the above tramways were purchased by Campbell P. Ogilvie, an Englishman, who secured on November 15, 1890, a concession from the Government to continue the line to San Lorenzo del Campo Grande, about 10 kilometers from Villa Morra. Shortly thereafter the new management changed the traction to steam from the city station to San Lorenzo, using locomotives purchased from H. K. Porter & Co., Pittsburgh, Pa. No further extensions were made until after August 28, 1909, on which date a concession was granted to Jorge Barzi & Cía. to construct a horse or steam traction line from the port to Puerto Sajonia.

On December 7, 1910, the Government granted a concession to Juan Carosio, now president of the Compañía Americana de Luz y Tracción, for the construction of a system of electric tramways for passengers and freight and for power plants necessary for the production and sale of electric energy. However, in consideration of certain modifications the concessionaire was obliged to electrify the line to Villa Morra and the electric traction opened to the public in 1912. On December 19, 1912, Mr. Carosio was authorized to electrify the tramway to Puerto Sajonia, electrification being completed early in 1914.

According to a decree of the municipality of Asuncion dated November 22, 1913, the concession of December 7, 1910, was authorized to be transferred to the Asuncion Tramway, Light & Power Co., a British company operating in conjunction with the Paraguay Central Railway. However, in 1914 the company was unable to meet its financial obligations contracted with the Paraguay Central Railway, and in October it was placed in the hands of a receiver. In accordance with municipal decree No. 879, of February 4, 1919, the concession granted on December 7, 1910, and transferred to the Asuncion Tramway, Light & Power Co. was acquired by the Compañía Italo-Argentina de Electricidad, of Buenos Aires, operating in Asuncion under the name of the Compañía Americana de Luz y Tracción.

Since 1913 several new services have been offered the public, and the tramway now operates nine lines with electric traction within the city proper and the steam line to San Lorenzo, all of 4-foot 8½-inch gauge with the exception of the narrow-gauge horse traction from La Recoleta to Trinidad. The competition to the company's passenger service in 1924 by the establishment of various independent bus lines from the port to Puerto Sajonia, Villa Morra, etc., caused the Compañía Americana de Luz y Tracción to purchase and place in immediate operation last December four Ford motor busses. These busses are now on the "run" from the port to Villa Morra, supplementing the 20-minute relay between the No. 6 trams.

Although the company has several plans for the extension of its service, especially to Ita via San Lorenzo, about 23 kilometers, and to the Jardín Botánico via Avenida Venezuela, about 5½ kilometers, no definite action has been taken with regard to construction. These two services would greatly facilitate travel and would benefit materially the trade with Ita, one of the best centers of agricultural production in Paraguay. It is reported that concessions have already been secured for the construction of these two lines, but the officials in Asuncion are unable to state anything definite.

On December 31, 1924, the tramway operated 30.977 kilometers of electric traction, 10.860 kilometers of steam traction, and 4.133 kilometers by mules or horses, making a total of 45.970 kilometers, or 28.56 miles. There are 10 different services, 9 of which center at the port, whence they radiate throughout the city. The electric train to Villa Morra, from which station the journey is continued to San Lorenzo del Campo Grande by steam traction, leaves the market square in the center of the city. The 0.264 kilometer in the extension of No. 2 electric traction line in 1924, with a decline of 0.147 kilometer in horse traction, caused a total increase in 1924 from 45.854 kilometers in 1923 to 45.971 kilometers.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the calendar year ended December 31, 1924, are as follows:

President, Juan Carosio, Calle Corrientes No. 651, Buenos Aires.
Vice president, Atanasio Iturbe, Calle Corientes No. 651. Buenos Aires.
Secretary, Augustin Zamboni, Calle Corrientes No. 651, Buenos Aires.
Director general, Raimundo Ramoni, Calle Corrientes No. 651, Buenos Aires.
Director, Luis Raimondi, Asuncion.
Subdirector, Jose Innocenzi, Asuncion.
Engineer, Tito Lino Piazza, Asuncion.

All major purchases are made from the Buenos Aires office, and there is no purchasing agent in Buenos Aires or Asuncion. All purchases are made through the directors.

The Asuncion Tramway, Light & Power Co. was controlled by the Paraguay Central Railway prior to the sale in 1918, and it experienced certain financial difficulties, causing a receiver to be appointed in 1914. Several loans were authorized to the tramway company, amounting to £87,685, including interest, and an investment totaling £229,359 was made, but later reduced to £207,000. In view of its control the railway company reserved an option of taking £119,850 in cash or £144,398 in debentures of the utility company, as well as £15,624 in cash, £240,000 in ordinary shares, and £135,274 in preferred shares. The Paraguay Central Railway was further obliged to spend an additional sum of £9,465, for which preferred shares of the tramway company were to be given.

The Asuncion Tramway, Light & Power Co. was represented with a nominal capital of 3,000,000 gold pesos. However, the present company, Compañía Americana de Luz y Tracción, is capitalized at 2,000,000 Argentine paper pesos, 1,796,100 pesos of which have been paid in, with authorized debentures amounting to 2,100,000 Argentine paper pesos at 7 per cent interest.

The balance sheet for the calendar year ended December 31, 1924, is as follows:

Items	Argentine gold pesos	Argentine paper pesos
ASSETS		
Shares, to be emitted		203,900
Debentures, to be emitted		1,023,000
In cash and banks	4,661	6,646
Current accounts	62,206	149,674
Properties, tramways, machinery, installations, and wires	1,512,532	716,598
Shares and bonds	81	147,965
Furniture and fixtures		1
Materials	143,793	29,163
Directors' shares		50,000
Various accounts	3,368	92,025
Conversion		3,888,662
Total	1,726,641	6,307,634
LIABILITIES		
Capital, authorized		2,000,000
Debentures, 2,100,000 pesos, less amortization, 110,000 pesos		1,990,000
Legal reserve fund		26,099
Amortization funds		153,922
Current accounts	14,378	382,349
Bills payable		1,550,000
Balance dividends payable		160
Deposit of directors' shares		50,000
Various accounts	1,252	
Balance of 1923		1,442
Profit and loss		153,663
Conversion	1,711,011	
Total	1,726,641	6,307,635

As compared with the previous year the balance shows a total of 1,726,641.47 Argentine gold pesos and 6,307,634.52 Argentine paper pesos in 1924 as against a gold balance of 1,757,737.52 and 6,367,746.11 Argentine paper in 1923.

The 1924 net earnings of the Compañía Americana de Luz y Tracción, in Argentine paper, amounted to 153,662.67 pesos, which, converted at 2.82 to the dollar, the average exchange for 1924, amounted to $54,476.12 United States currency. In comparison with 1923 the above net earnings show an increase of 96,635.13 Argentine paper, or $34,267.77. The 1914 net earnings amounted to $12,561, or $41,915.12 less than the 1924 return.

In comparing the net earnings of 1923 with 1924 it should be noted that the strike of tramway workers in the latter part of 1923 resulted in a loss of a considerable revenue with certain extraordinary expenses. However, the revenue from the greater traffic in freight during 1924 as compared with the previous year may be accepted as an indication of a legitimate increase in the 1924 movement.

The total net earnings of 1924 were distributed in the following manner (figures are in Argentine paper pesos):

		Pesos
Total net earnings		153, 662
2 per cent to legal reserve fund	3, 073	
5 per cent to directorate and syndicate	7, 683	
		10, 756
Balance profits		142, 906
1923 balance carried over		1, 442
		144, 348
To cancel certain obligations		143, 141
Balance credited to 1925		1, 207

Owing to the 1922 balance of 135,309.51 Argentine paper pesos credited to the 1923 account, the company in 1923 was in a position to apply a sum amounting to 188,128.23 pesos to the cancellation of certain obligations.

The profit-and-loss statement of the Compañía Americana de Luz y Tracción for 1924 is given below. However, this statement, as well as the balance sheet, includes the electric-light service as well as the tramway. Figures are in Argentine paper pesos.

Debit		Credit	
	Pesos		*Pesos*
Administration and various expenses	70, 680	Settlement of accounts of exploitation sales, and various	422, 388
Interests, discounts, debenture services	198, 045		
Balance	153, 663		
Total	422, 388	Total	422, 388

It is not possible to secure a profit-and-loss statement referring to the tramway, but it is reported that the tramway did earn more than enough to cover expenses in 1924. In comparison with 1923 the 1924 gross earnings show an increase of 101,671.80 Argentine paper pesos.

It has not been possible to secure data showing the kind and amount of funded obligations or the nationality of the majority of the shareholders. It is presumed, however, that the shareholders are largely of Italian and Argentine nationality. Shares of the Compañía Americana de Luz y Traccíon are sold regularly on the Buenos Aires and Montevideo Stock Exchanges.

TRAFFIC STATISTICS

During 1924 the company was able to recuperate in part from losses incurred during October, November, and December of 1923 because of the strike. The figures supplied to the American consulate at Asuncion manifest an improvement of 73.35 per cent in the number of kilometers run in 1924 as compared with the previous year.

The freight carried in 1924 amounted to 5,355,023 kilos as compared with 1,909,500 kilos in 1923 and 2,304,470 kilos in 1914. The increase of 180 per cent over 1923 manifests the lack of motor transportation which only recently has been slightly improved. Statistics showing ton-miles or amounts of principal commodities carried are not kept by the company.

The number of passengers carried in 1924 was 3,447,233, as against 2,584,262 in 1923 and 2,850,955 in 1914. The increase is due to an improved general service of 103,435 trips, causing an advance in the kilometers run from 898,840 kilometers in 1922 to 1,243,678 kilometers in 1924.

RIGHT OF WAY

Gauge.—The gauge of the electric and steam traction is 4 feet 8½ inches, but the 4.133 kilometers from Recoleta to Trinidad are of narrow gauge.

Grades.—The grades on the lines of the tramway average from 3 to 5 per cent, none of which are more than 370 meters in length.

Curves.—The radius of the minimum curve is 100 meters on the steam traction line, compared with 16 meters on the electric traction line.

Ballast.—Broken stone is used as ballast.

Ties.—Ties of lapacho, urunday-me, and tatayibo hardwoods, 2.50 by 0.30 by 0.15 meters, spaced 1,720 to 1,840 to the kilometer, are used. As the ballast is subjected periodically to washouts caused by torrential rains and the lack of street drainage, more ties are used per kilometer on the tramway than are reported employed by the Paraguay Central Railway. The hardwoods used for ties are all obtained from Paraguayan forests, and it is understood the supply is plentiful.

Rails.—Rails used by the tramway weigh 15 kilos, or 33 pounds, to the meter and are 9 meters in length.

Water.—The water supply used for the steam traction line is obtained from wells situated at San Lorenzo and the barns at San Miguel, in Asuncion.

Fuel.—Both electricity and steam power are used for traction. Wood is used as fuel in the locomotives on the line to San Lorenzo and in the power plants and is obtained from near-by forests and brought to Asuncion as occasion warrants. There appears to be no shortage in supply.

The current used for the electric traction portion of the tramway is supplied from the Asuncion company's plant at Puerto Sajonia, the reserve generating plant, and three substations in the city proper. The power is distributed between the plants and three substations as follows: Main plant, 2,350 kilowatts; reserve plant, 800 kilowatts; substation No. 1, with six transformers, 600 kilovolt-amperes; substation No. 2, with four transformers, 210 kilovolt-amperes; substation No. 3, with one transformer, 100 kilovolt-amperes—a total of 3,878 kilowatts. According to information supplied to the consulate the company will establish four new substations in Asuncion, increasing the power as follows: Substation No. 4, with one transformer, 100 kilovolt-amperes; substation No. 5, with one transformer, 70 kilovolt amperes; No. 6, with one transformer, 70 kilovolt-amperes; No. 7, with three transformers, 270 kilovolt-amperes. With the new substation the transformation of electrical energy will amount to 1,420 kilovolt-amperes.

The following comparative table shows the electric wire installations in kilometers:

Items	December 31—	
	1923	1924
	Kilometers	*Kilometers*
High tension: Underground cables, 3 phase and 50 cycles, 6,000 volts	10. 883	10. 883
Low tension:		
Alternating current (50 cycles, 220 volts)—		
Primary distribution, underground cables	2. 235	2. 235
Primary distribution, aerial cables	11. 775	11. 775
Secondary distribution, aerial cables	146. 563	153. 923
Direct current (550 volts)—		
Underground, trolley distribution	7. 466	7. 466
Aerial, trolley distribution	3. 200	3. 200
Public lighting distribution	21. 926	21. 926
Public lighting series	51. 126	51. 126
Telephone system	60. 183	60. 183
Total	315. 357	322. 717
Aerial trolley line: For tramway	28. 001	30. 976

It is observed from the above table that the only increases in 1924, as compared with 1923, were 7.360 kilometers of aerial distributing cables of alternating current and 2.976 kilometers of the aerial line for tramways, the latter occurring through the extension and change of itinerary of the No. 2 line from the port to Belvedere. The energy generated in 1924 was 3,069,180 kilowatt-hours, as compared with 2,673,530 kilowatt-hours in 1923.

The American consulate is informed by the electrical engineer of the municipality of Asuncion that the power stations, etc., of the Compañía Americana de Luz y Tracción, in Asuncion, are equipped with the following:

3 horizontal steam engines, directly connected to alternators, of 400 kilowatts each. Make: Franco-Tosi, of Italy.
1 turbo-generator (alternator) of 1,000 kilowatts. Make: Brown, Boveri & Co., Switzerland.
11 transformers: 50, 60, and 100 kilovolt-amperes. Make: Schuckert & Siemens, Germany.
2 synchronous converters. Make: Compañía Industrial de Electricidad del Rio de la Plata, Buenos Aires.
1 synchronous converter. Make: Schuckert & Siemens, Germany. Various boilers from Franco-Tosi, Legnago, Italy.

Signaling equipment.—There are no signals in use on the tramway, steam or electric traction.

Maintenance.—All parts of the roadbed are repaired regularly in order to accommodate as heavy traffic as they were designed to carry.

Bridges.—In Asuncion and points toward San Lorenzo there are a few wooden bridges, which are kept in the best repair. These bridges, however, are not more than 6 meters in length over small streams.

MOTIVE POWER AND ROLLING STOCK

At the present time the tramway company in Asuncion has five locomotives with one guiding and two driving axles. The dimensions of the cylinders are 240 by 350 millimeters and the weight of the locomotives approximately 15 tons. In connection with the steam traction line the company also has 24 wagons with two axles for the transport of goods up to 2,000 kilos and 8 wagons with four axles up to 6,000 kilos. The approximate height of the couplers is 0.45 meter, and each wagon has two wooden buffers without springs.

In addition to the above rolling stock the company has 4 electric freight wagons with 6 trailers. The electric cars for passengers number 21 with 10 trailers. All electric cars are old models. It is understood that the Buenos Aires office of the company has contracted for 6 new cars with Breda chassis and Brown, Boveri & Co. motor equipment.

REPAIR SHOPS

There is one repair shop, located in the section of the city known as San Miguel. The shop is fairly well equipped and employs 60 men. It handles 3 locomotives and 18 wagons per annum. All tools are driven with electric power.

LA AZUCARERA PARAGUAYA

This is a small meter-gauge road extending a distance of 8 miles from Tebicuary inland to the forests. It is operated solely for the company's use. Purchases for the road are made by the manager of the company, who should be addressed at Tebicuary, Paraguay.

The company has been granted a concession to extend the railway a distance of 5.5 miles. The road is exempt from federal and municipal taxes for 25 years, as is the material, rolling stock, tools, and supplies necessary for the construction and conservation of the line. The Government will enjoy a reduction of 50 per cent in the regular freight and passenger tariffs of the road.

Traffic on the road approximates 25,000 to 30,000 logs annually. At times, however, the transportation is far below the average on account of revolutions, but the average number carried is 23,000 tons yearly.

Gauge.—The gauge of the railway is narrow—76 centimeters.

Grades.—There is only a gradual grade for a distance of about 10.5 miles.

Ballast.—Earth and stone are used as ballast.

Ties.—Ties of Paraguayan hardwoods (obtained from the company's forests), 2 meters by 12 centimeters by 24 centimeters, and placed 40 centimeters apart, are used on the road.

Rails.—Rails weighing from 17 to 18 kilos to the meter, from 7 to 10 meters in length, are used on the road.

Water.—Water is obtained from the Paraguay River and stored in rectangular steel tanks at the railway head. There are no water deposits along the right of way.

Fuel.—Wood obtained from the company's properties is used as fuel. At the present time there are no plans for change in fuel.

Maintenance.—The roadbed and track are kept in sufficiently good condition to carry as heavy traffic as they were originally designed to bear.

CARLOS CASADO LAND CO. (LTD.)

(COMPAÑÍA DE TIERRAS CARLOS CASADO)

This company has a small 75-centimeter-gauge road extending inland a distance of 59 miles from Puerto Casado to the forests. It is operated solely in connection with the quebracho plant of this company. This is the pioneer of all industrial enterprises in the Paraguayan Chaco. The company has at the present time about 25,000 square miles of forest lands. The Casado interests were organized in 1909 as an Argentine limited liability company, with a capital stock of 1,500,000 pesos. At the present time the capital is 4,500,000 gold pesos.

Purchases for the road are made by the company direct. Offices are located at Calle 25 de Mayo 158, Buenos Aires.

Approximately 500,000 gold pesos represents the investment in th railway.

Rails weighing 9 kilos per meter, laid on hardwood crossties, ar used.

Bridges are of local hardwood timbers.

The rolling stock at the present time consists of 4 Koppel locomotives, 1 English locomotive, and 100 Koppel wagonettes for haulin logs.

COMPAÑÍA PUERTO IBAPOBO

Construction on the railway of the Compañía Puerto Ibapobo wa started in 1905. A total of 12.4 miles were completed in 1909 an in 1918 4.9 miles more were laid. From 1918 to the present tim 3.1 additional miles have been constructed, making a total mileag of 20.4. The company was originally known as the Compañí Forestal del Paraguay, but a short time ago it was taken over b Devoto, Carbone & Cía. and eventually made a part of the Compañía Puerto Ibapobo, being now known by this name. The railway is operated without Government guaranty or subvention and i used solely for the purpose of transporting the company's timbe from the inland forest to the river port.

The operating officials of the road at the end of the fiscal year 192 were as follows (all at Puerto Ibapobo): President, Gustavo Haach director general, Jose L. De Voto; director, R. W. McCaen.

All purchases are made from the company's office at Puerto Ibapobo. Purchases must have the specific approval of R. W. McCaen who is also assistant manager of the Buenos Aires branch of th First National Bank of Boston.

Practically no information is available on the finances of the road The capital stock of the company until about 18 months ago wa 3,000,000 Argentine paper pesos, but a readjustment has been mad reducing the capital to 600,000 Argentine paper pesos.

There are no tunnels or bridges on the road.

The motive power and rolling stock for the fiscal year ended Jun 30, 1924, is as follows:

Locomotives (6 wheels each):
  2 weighing 12,000 kilos, cylinder 20 centimeters.
  2 of 15,000 kilos, cylinder 24 centimeters.
  1 of 20,000 kilos, cylinder 30½ centimeters.
Cars:
  20 trucks of American manufacture.
  25 trucks of German manufacture.

These trucks are capable of carrying loads weighing from 10,00 to 12,000 kilos.

There is one repair shop located at Puerto Ibapobo. The sho employs 25 men when working at capacity. An average of 12 locomotives and 24 wagons are repaired annually.

COMPAÑÍA INTERNACIONAL DE PRODUCTOS

The Compañía Internacional de Productos dates its history back t shortly after 1910, when the New York & Paraguay Co. acquired control of the holdings of the Compañía Rosarina de Campos y Bosques, which were located in the Chaco. In 1917 the International Products Co. acquired control of the properties of the New York & Paraguay Co. and undertook to construct a narrow-gauge railroa nning from Puerto Pinasco to the forests owned by the company, a stance of 43 miles. Two branch lines were constructed, one run- ng from mile 16 on the main line to Quebracho district, a distance 13 miles, and the other from mile 29 on the main line to the forests, miles in length. In November, 1919, the International Products o., with its subsidiary the Central Products Co., which at that time as engaged in the meat-packing business at San Antonio, was in- rporated under Paraguayan law as the Compañía Internacional de roductos. This company is operating the above-mentioned mileage the present time.

All purchases are made by the acting president of the Paraguayan mpany, Charles D. Bell, through the New York office, 120 Broad- y.

The railway handles no passenger traffic, but is operated solely for e purpose of transporting quebracho and other woods to the com- ny's plant. The approximate amount of wood carried per annum 4,000 metric tons.

Altitude.—The road has an average altitude of about 335 feet above sea level.

Gauge.—The gauge of the line is 1 meter.

Grades.—The maximum grade on the road is 5 per cent for 3,280 feet.

Curves.—The radius of the maximum curve is 656 feet.

Ballast.—Dirt and sand are used as ballast.

Ties.—Ties of quebracho wood 6.5 feet long, 8 inches high, and 8 inches wide e used on the road. There are 13 ties to each pair of rails of 30 feet.

Rails.—Rails weighing 35 and 45 pounds to the yard are used.

Water.—Water is obtained from the Paraguay River and various wells.

Fuel.—Quebracho wood obtained from the company's forests is used as fuel. ere are no plans for electrification.

Signaling equipment.—No signaling equipment is used.

Maintenance.—The track is kept in sufficiently good repair to accommodate heavy traffic as it was originally designed to carry.

Bridges.—There are 30 bridges of more than 22 feet in length and 74 culverts less than 22 feet in length. The bridges are made of red quebracho, lapacho, l curupay woods. The piles are driven in with pile drivers, and the trestles solid. These bridges are located over the "riachos." Of the larger bridges is 535 feet, one 269 feet, and one 246 feet.

Tunnels.—There are no tunnels on the road.

The motive power and rolling stock of the road comprise six loco- tives and 150 cars for carrying wood. Three of the locomotives of German make, three-coupled, with 9½-inch cylinders and 14- h stroke; two weigh 22 tons and one 14 tons. Three locomotives American made, are two-coupled, weigh 16½ tons, have 11-inch inders and 16-inch stroke.

The couplers used on the road are all 22 inches high but of different es.

There is one repair shop in the factory at Puerto Pinas. An aver- of four locomotives are repaired per year, while one car is aired per week.

PORT SASTRE LAND & QUEBRACHO CO.

(CAMPOS Y QUEBRACHALES PUERTO SASTRE)

This company was founded in 1905 and has a capital of 1,488,000 d pesos; 603,400 paper pesos is invested in the railway and rolling k.

Puerto Sastre, where the tannin factory is located, is almost ectly opposite the mouth of the Apa River, which forms the boundary between Brazil and Paraguay. The properties of the company include about 122 square leagues (880 square miles) of land. The plant has a capacity of about 1,000 tons per month. The road at the present time is 56 miles in length, of which 47 miles is permanent main line and the remainder sidings and spurs.

The president of the company is Pedro Mihanovich, and the secretary is Blas Queirolo.

Purchases for the road are made by the president, who should be addressed in care of the company at Calle Cangallo 499, Buenos Aires, Argentina.

The railway transports about 40,000 tons of logs per year.

Altitude.—The highest point on the road is approximately 200 feet above sea level.

Gauge.—The gauge is 75 centimeters.

Grades.—The maximum grade is 5 per cent per 1,000 meters.

Curves.—The radius of the minimum curve is 20 meters.

Ballast.—The road is ballasted with earth.

Ties.—Ties of quebracho are used.

Rails.—Rails weighing 15 and 12 kilos per meter are used.

Bridges.—The longest bridge is 70 meters and is built of timber.

Signaling equipment.—The company has 79 kilometers of telephone lines.

The motive power and rolling stock for the fiscal year ended June 30, 1925, are as follows:

5 locomotives, 4 axles (German).
1 locomotive, 3 axles, with tender (German).
75 wagonettes, 2 axles, steel frame without body, 12 tons capacity, for logs.
8 tank cars for water, 2 trucks.
5 box cars, 2 trucks.
2 service box cars, 2 trucks.

SOCIEDAD FORESTAL DE PUERTO GUARANI

This company was founded in 1910, but was reorganized in 1914 after a period of unsuccessful organization. The subscribed capital amounts to 1,750,000 pesos and the amount invested in the railway and rolling stock is 944,900 pesos. The company operates an industrial railway for the transport of logs from the forests to its factory. The road is 57 miles in length. The Puerto Guarani plant is the northernmost of the quebracho establishments. The company owns about 43 square leagues (310 square miles) of land in the vicinity. The capacity of the plant is about 700 tons of extract a month.

The president of the company is Alfredo M. Gandara and the secretary is Pedro Huidobro.

Purchases of supplies for the company are made by the president, who should be addressed at Calle Florida 511, Buenos Aires, Argentina.

The net profits of the company for the year 1924 amounted to 148,633 paper pesos.

The railway transports about 5,000 tons of logs monthly.

Altitude.—The highest point on the road is approximately 200 feet above sea level.

Gauge.—The gauge of the road is 30 inches.

Grades.—There are no grades of any importance.

Curves.—There are no curves of any importance.

Ballast.—The roadbed is earth ballasted.

Ties.—Ties of quebracho wood are used.

Rails.—Rails weighing 15 kilos per meter are used.

Water.—There are six two-axle tank cars for the supply of water.

Fuel.—Wood obtained locally is used as fuel.

Signaling equipment.—Telephones are used for signaling. The company has its own telephone system.

Bridges.—The longest bridge on the road is located at kilometer 61 over the Salado River. It has a length of 85 meters and is constructed of timber.

The rolling stock consists of 3 Koppel locomotives of 80 horsepower each and 70 flat cars of 10 and 12 tons capacity. The cars are of four axles.

QUEBRACHALES Y ESTANCIAS

This was formerly a small narrow-gauge road extending a distance of 20 miles from Puerto Galileo inland to the forests—operated solely for the company's use.

The company was incorporated in Argentina in 1906, and in 1920 it had a capital of 1,000,000 Argentine gold pesos. It is said to be controlled by the Mihanovich family, which owns about 725 square miles of land in that vicinity. The factory had a capacity of 250 tons per month, but operated only intermittently. Recently it was dismantled and the entire equipment moved to the Argentina factory. Further information on this company can be found in the handbook entitled "Railways of South America—Part I: Argentina" (Trade Promotion Series No. 32).

QUEBRACHALES FUSIONADOS

This company formerly operated a small narrow-gauge road extending a distance of 12 miles from Puerto Max inland to the forests. This company is a combination of two other companies capitalized in 1920 at 5,250,000 Argentine paper pesos. The principal plant is at Puerto Tirol, Argentina. The Paraguayan factory is at Puerto Max, on the east side of the Paraguay River, and adjacent to it are about 175 square miles of quebracho lands owned by the company. The factory has a capacity of about 700 tons per month. An additional 725 square miles of land are owned in the Paraguayan Chaco, with a factory formerly operated but abandoned not long ago. At the present time this road has been dismantled and the material moved to the company's factories in Argentina.

PERU

GENERAL CHARACTERISTICS .

Peru has an area of 690,000 square miles, with a coast line of 1,200 miles. It is bounded on the south by Chile and Bolivia, on the east by Bolivia and Brazil, and on the north by Colombia and Ecuador. Certain boundary questions with all these countries are in process of settlement. Treaties with Brazil and Bolivia have already been consummated.

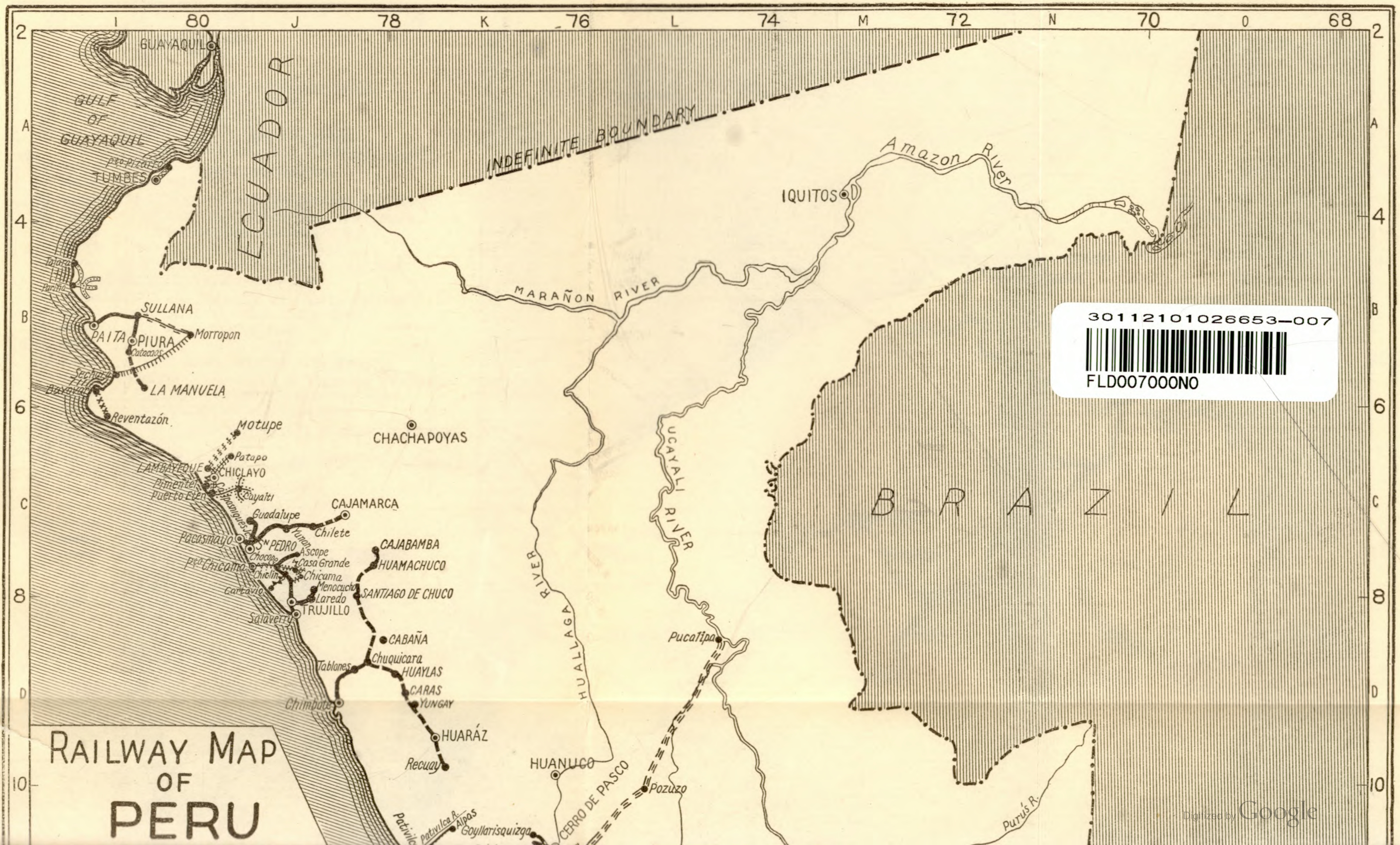
The Royal Cordillera of the Andes, often called the Continental Divide, divides Peru into three clearly defined areas—the "Costa," or coastal region; the "Sierra," or Andean region; and the "Montana," or forest region. The latter lies within the basin of the Amazon. The barrier which divides the region of inland navigable waterways from that of the rainless coast is generally considered to consist of three distinct ranges—the Eastern Cordilleras, or Andes proper, rising in height from north to south and containing the lofty peaks of Huascan (22,000 feet), Cerro de Huandoii and Cerro de Huancan (each over 20,000 feet), Tacora, and Sara Sara, and the Maritime and Central Cordilleras, running parallel near each other on the western side of the main range and inclosing the narrow, lofty plateau known as the "Puna."

The coastal region, lying between the Maritime Cordilleras and the seaboard, is for the most part rainless and destitute of vegetation, except in some of the valleys which irrigation has reclaimed. The coast line is barren and has few sheltered anchorages.

The Andean region lies between the Coastal Cordillera and the Great Divide. It is itself divided into three zones, the "Puna," the "Sierra," and the "Quebrada," and is of much greater extent than the coastal region, having a width of about 250 miles. The desolate, arid region of the Puna extends between 11,500 and 16,000 feet above sea level and has lofty peaks that rise nearly 20,000 feet.

Below the Puna stretches the Sierra region, composed of valleys with great agricultural possibilities. The Huancayo Valley is the most fertile and productive. These valleys are formed by the 20 or more rivers which rise on the Andean slopes and flow eastward. The Maranon River breaks through the Central Cordillera in a series of wild gorges and rapids until in the debatable region between Ecuador and Peru it is joined by the Huallaga and the Ucayali; these three great streams form the farthest headwaters of the Amazonian system. Lake Lauricocha, north of Cerro de Pasco and 14,270 feet above sea level, is generally regarded as the original source of the Amazon. Beyond Cerro de Pasco the Andean region is drained by tributaries of the Ucayali—the Apurimac, Urubamba, Mantario, Xauxa, Vilcamaya, and Paucartambo. In this region there are numerous lakes, of which the largest is Titicaca. This lake is drained by a number of rivers, of which the Moho, Ramis, Coata, Llave, Juli, and Desaguadero are the most important.

The Quebrada, or lowest region of the Andes, is very similar to the coastal region. There is practically no rainfall, and fertility is limited to the banks of alluvium left between the windings of the rivers that flow from the Puna westward to the Pacific.



RAILWAY MAP OF PERU

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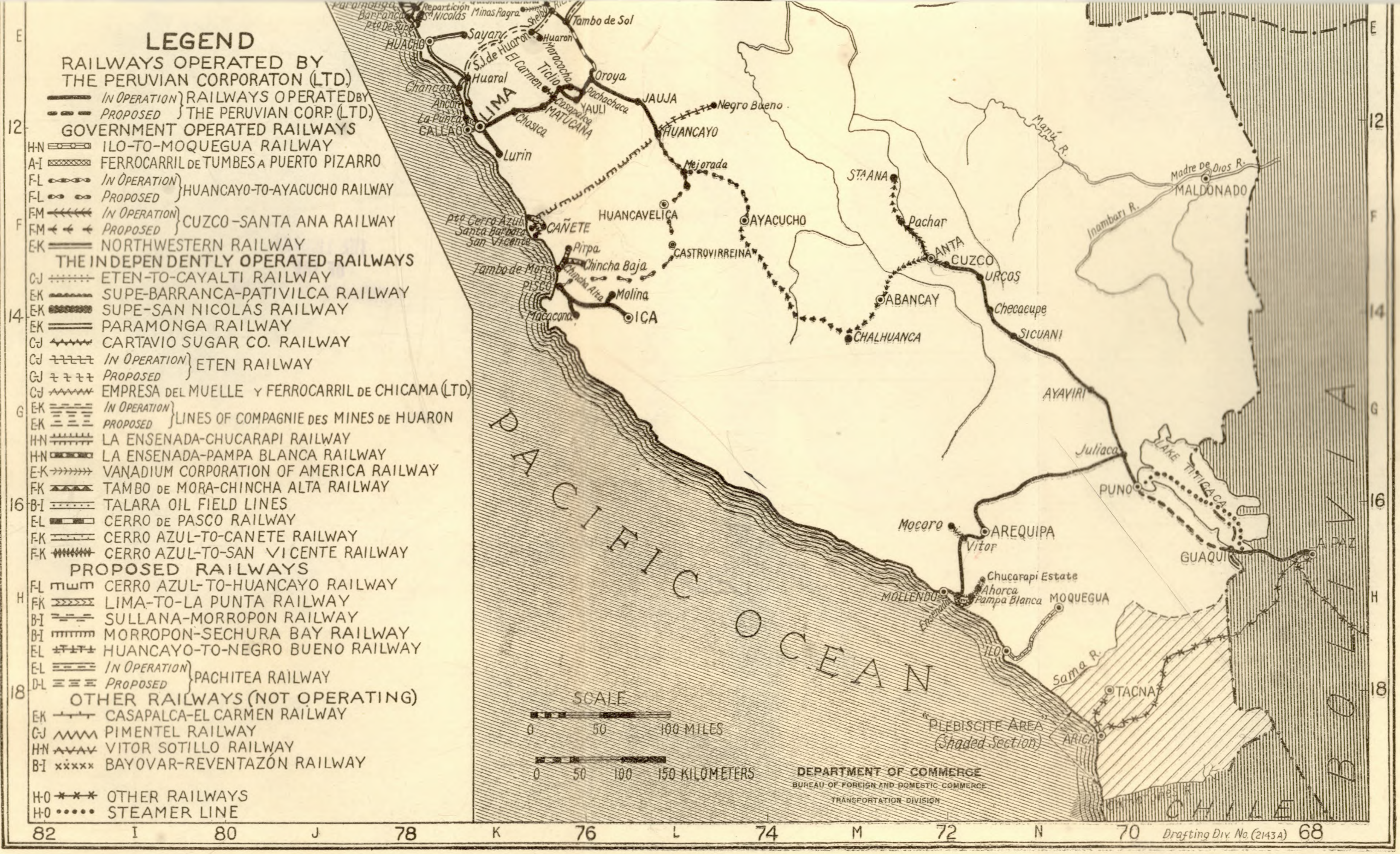

LEGEND
RAILWAYS OPERATED BY THE PERUVIAN CORPORATON (LTD.)
In Operation } RAILWAYS OPERATED BY
Proposed } THE PERUVIAN CORP. (LTD.)
GOVERNMENT OPERATED RAILWAYS
H-N ILO-TO-MOQUEGUA RAILWAY
A-I FERROCARRIL DE TUMBES A PUERTO PIZARRO
F-L In Operation } HUANCAYO-TO-AYACUCHO RAILWAY
F-L Proposed
F-M In Operation } CUZCO-SANTA ANA RAILWAY
F-M Proposed
E-K NORTHWESTERN RAILWAY
THE INDEPENDENTLY OPERATED RAILWAYS
C-J ETEN-TO-CAYALTI RAILWAY
E-K SUPE-BARRANCA-PATIVILCA RAILWAY
E-K SUPE-SAN NICOLÁS RAILWAY
E-K PARAMONGA RAILWAY
C-J CARTAVIO SUGAR CO. RAILWAY
C-J In Operation } ETEN RAILWAY
C-J Proposed
C-J EMPRESA DEL MUELLE Y FERROCARRIL DE CHICAMA (LTD.)
E-K In Operation } LINES OF COMPAGNIE DES MINES DE HUARON
E-K Proposed
H-N LA ENSENADA-CHUCARAPI RAILWAY
H-N LA ENSENADA-PAMPA BLANCA RAILWAY
E-K VANADIUM CORPORATION OF AMERICA RAILWAY
F-K TAMBO DE MORA-CHINCHA ALTA RAILWAY
B-I TALARA OIL FIELD LINES
E-L CERRO DE PASCO RAILWAY
F-K CERRO AZUL-TO-CANETE RAILWAY
F-K CERRO AZUL-TO-SAN VICENTE RAILWAY
PROPOSED RAILWAYS
F-L CERRO AZUL-TO-HUANCAYO RAILWAY
F-K LIMA-TO-LA PUNTA RAILWAY
B-I SULLANA-MORROPON RAILWAY
B-I MORROPON-SECHURA BAY RAILWAY
E-L HUANCAYO-TO-NEGRO BUENO RAILWAY
E-L In Operation } PACHITEA RAILWAY
D-L Proposed
OTHER RAILWAYS (NOT OPERATING)
E-K CASAPALCA-EL CARMEN RAILWAY
C-J PIMENTEL RAILWAY
H-N VITOR SOTILLO RAILWAY
B-I BAYOVAR-REVENTAZÓN RAILWAY
H-O OTHER RAILWAYS
H-O STEAMER LINE
Paramonga
Barranca
S. Nicolas
Repartición
Minas Ragra
Pto De Supe
Tambo de Sol
Sayan
Huaron
HUACHO
S.J. de Huaron
Shelby
Morococha
El Carmen
Ticlio
Oroya
Huaral
Chancay
Ancon
La Punta
CALLAO
LIMA
Casapalca
Pachachaca
YAULI
MATUCANA
Chasica
JAUJA
Negro Bueno
HUANCAYO
Lurin
Mejorada
HUANCAVELICA
AYACUCHO
Pto Cerro Azul
Santa Barbara
San Vicente
CAÑETE
CASTROVIRREINA
Pirpa
Chincha Baja
Tambo de Mora
PISCO
Chincha Alta
Molina
Macacona
ICA
STA ANA
Pachar
ANTA
CUZCO
URCOS
ABANCAY
CHALHUANCA
Checacupe
SICUANI
Manú R.
Madre de Dios R.
MALDONADO
Inambari R.
AYAVIRI
Juliaca
LAKE TITICACA
PUNO
Mocoro
AREQUIPA
Vitor
GUAQUI
LA PAZ
Chucarapi Estate
Ahorca
Pampa Blanca
MOLLENDO
Ensenada
MOQUEGUA
ILO
Sama R.
TACNA
ARICA
"PLEBISCITE AREA" (Shaded Section)
PACIFIC OCEAN
BOLIVIA
CHILE
SCALE
0 50 100 MILES
0 50 100 150 KILOMETERS
DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE
TRANSPORTATION DIVISION
Drafting Div. No. (2143A)
82 I 80 J 78 K 76 L 74 M 72 N 70 68
E
12
F
14
G
16
H
18

FIG. 10

104289°—27. (Face p. 192.)

The third great region of Peru is the trans-Andean, known as the Montana. It embraces a total area of approximately 200,000 square miles and has its western limit on the eastern flank of the Andean plateau at an altitude of about 5,000 feet above sea level. Its eastern limit is near sea level on the navigable Amazon. It consists of a series of tropical forests drained by a network of rivers and is still practically a wilderness. Through it run the Maranon, Hullaga, and Ucayali Rivers, as well as the Yavari, Madre de Dios, and others, most of which are navigable. Of these rivers the Yavari joins the Amazon below Tabatinga and for most of its course forms the political boundary with Brazil.

Road communication in Peru, because of the difficulties which nature has placed in the way, is far from easy. Most of the "roads" are merely tracks suitable for mules and llamas. This method is often the sole means by which transport can be effected. Some few roads suitable for automobiles do exist. In no country of the world are the problems of road building more difficult than in Peru, by reason of the varied topography of the country.

Peru was the pioneer railway country of South America, although great obstacles were overcome in the construction of railways. The first line was opened to traffic in 1851. In 1925 the mileage had been increased until approximately 3,500 kilometers of track were in operation. Of this amount approximately 100 miles of electric street car and suburban lines are in operation. The Peruvian Corporation (Ltd.) controls the larger portion of the railroads, having received them through the settlement of the foreign debt in 1890. Some roads are operated by the Government, while there are many independent roads which are small and of little benefit to the country as a whole. Only recently has the Government considered the advisability of a railroad system that would link up one end of the country with the other. Elaborate plans, schemes, and concessions have been made, but up to the present time no action has been taken for the construction of such a system. Peru is handicapped by its apparent inability to secure sufficient revenues to construct such a system. It is necessary to part with huge land grants, inclusive of mineral rights.

Figure 11 shows the relative increase in both freight and passenger traffic as compared with the railway kilometrage during the years indicated.

RAILWAY POLICY

While at the present time all the railway construction that is being carried on is under the direct supervision of the Government through the department of public works of the Ministry of Fomento it has not been so in the past. The first effect of Government management was felt under the law enacted on October 25, 1893, which stated the conditions governing the issuance of railway concessions. A copy of this law is as follows:

GENERAL LAW GOVERNING RAILWAY CONCESSIONS, ENACTED OCTOBER 25, 1893

ARTICLE 1. The executive power is hereby authorized to grant the following concessions to companies which propose to construct and operate on their own account mechanical traction railways within the Republic:

1. The right of operation for the period deemed advisable, conceding the ownership of the lines in perpetuity if necessary.

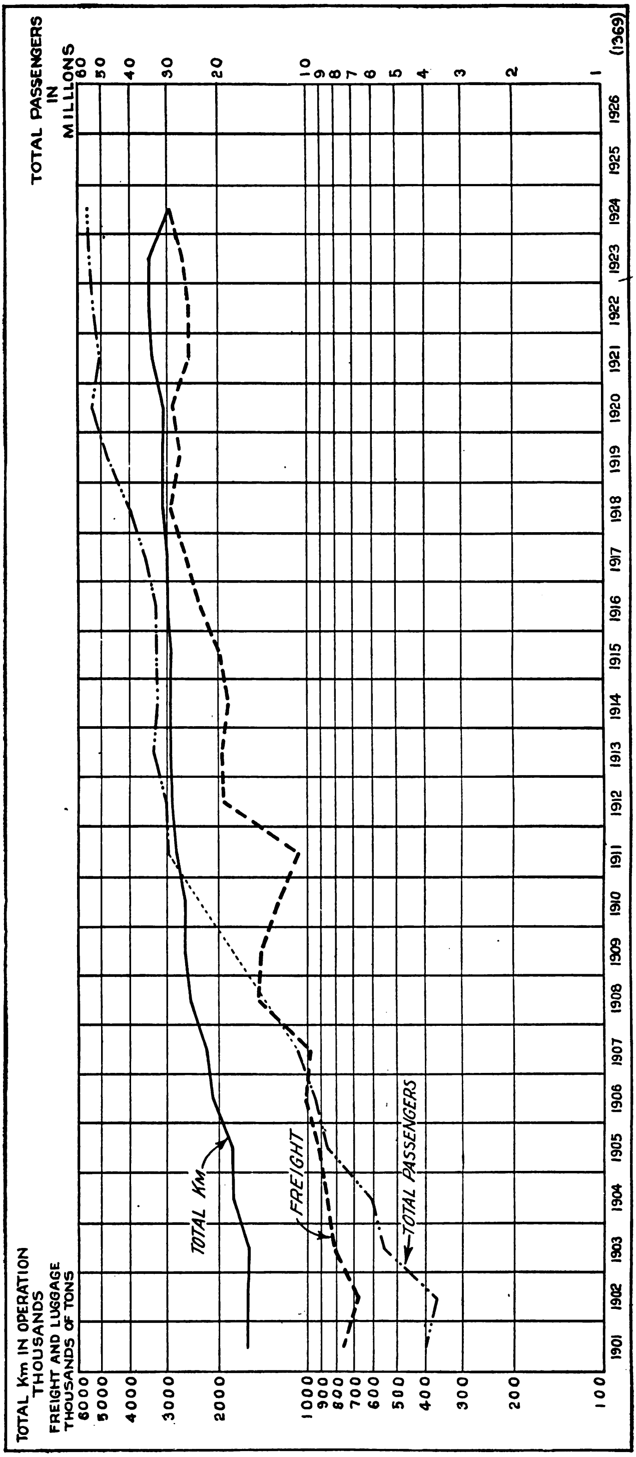


FIG. 11.—Peruvian railways: Increase in traffic, compared with kilometrage

2. Concession or exclusive control up to a period of 30 years.

3. Exemption from fiscal duties during the period of concession for ties, rails, locomotives, tanks, coaches, and other vehicles for railways; nails and screws for the same; telegraph posts and wires, metal bridges, and absolutely indispensable equipment and supplies not of a minor nature which may be brought in through the ports of the Republic for the construction and repair of railway lines.

Art. 2. The constructors of railways may be granted the use of Government lands traversed by the line, with a maximum extension of 200 meters on each side, with the exception of those which the State may wish to utilize for Government projects, as well as those which may be necessary for the crossing of other lines or for the establishment of works of public utility.

Said concession shall continue during the period of operation or ownership of the line, as the case may be.

Art. 3. For the purposes of this law the construction of railways is declared to be of public benefit, and the Executive will give companies the necessary facilities for expropriation.

Art. 4. The time allowed for the construction of railways shall be a maximum of two years for the first 20 kilometers or for the whole line if it is less than this length, six months being added to the original time for each 10 kilometers or a proportional period for less than 10 kilometers.

Art. 5. The concession shall be withdrawn if in any period one-half of the extension referred to in the preceding article has not been constructed or if in double the period the whole of the line has not been completed.

Art. 6. The promoters of railways shall be given the preferential right to extend their lines and to construct branch lines by giving double the guaranty which can be required of any other bidder. The same time limit and other conditions mentioned shall apply to the new line.

Art. 7. A sound guaranty shall be required for the faithful fulfillment of contract, and the amount of the same and of fines imposed for failure to build the line or for any other cause shall be proportional to the size and importance of the work.

Art. 8. Railways constructed under this law may be expropriated by the Government in accordance with the laws.

Art. 9. The preceding concessions shall be granted in whole or in part as is most advantageous for the interests of the Republic. In all other matters the Government shall follow the rules and regulations issued concerning railways, which must be strictly complied with by the railway companies.

Lima, October 25, 1893.

After the passage of this law concessions were granted in accordance with its provisions, although very little construction was actually done. Under date of December 10, 1918, Law No. 2938 was enacted by the Peruvian Legislature prescribing rules and regulations, as follows:

GOVERNMENT CONTROL OF RAILWAYS AS PROVIDED FOR IN LAW NO. 2938, OF DECEMBER 10, 1918

Article 1. All railway companies now existing within the territory of the Republic are subject to the supervision of the public authorities and must obey the laws and the regulations which may be issued by the executive power in virtue of its attributes.

Art. 2. The said companies are obliged to maintain traffic on their railways in such a way that they will not endanger the safety of their passengers and freight and must keep in good order the rolling stock necessary to meet the needs of the passengers as well as for the transportation of goods and merchandise.

Art. 3. The executive power shall specify the safeguards under which the trains and rolling stock shall operate and the time and the way in which the companies shall carry on the transportation of passengers and freight.

Art. 4. The railway companies are obliged to carry on their service on absolute equality of terms toward all who solicit it from them. They can not make concessions, discounts, or reductions in their rates to given companies or individuals without the previous or express approval of the executive power, which can not be granted when said discounts, concessions, or reductions may injure another company or merchant who may be in a position analogous to that of those for whom the favor is sought. If a rebate is granted the companies shall extend the same to all who may request it.

The violators of this article shall pay a fine equal to double the sum fixed in the general transportation tariffs for the first offense, triple the sum for the second, and so on successively. The above fines shall be imposed by the executive power, which remains exempt from the effects of this regulation.

Art. 5. The railway companies shall present all the data which may be asked of them by the executive power, with the object of proving that they have not made the concessions, discounts, or reductions referred to in the preceding article.

Art. 6. The railway companies shall not suspend their traffic or the rebates granted in their rates without authorization from the executive power, which will grant it or not in view of the financial conditions of the companies. When this authorization is granted the companies shall give the advance notice which the executive power may stipulate in the regulations. In case of suspension of traffic, the executive power may take immediately the necessary steps to continue operation temporarily at the expense of the companies.

At the end of a year the companies must prove that they have sufficient resources to enable them to continue operation; and they shall have the power to transfer the business to another person or entity, by a previous special authorization from the executive power. If traffic can not be maintained, even after a transfer has been made, action shall be taken in accordance with article 950 of the Commercial Code.

Art. 7. The executive power shall appoint, for each railway in operation for public service, an engineer who shall act as technical inspector of said road. A single engineer may serve as inspector for various roads.

Art. 8. The inspectors shall see to the strict fulfillment of this law, of the railway rules and regulations, and of other decrees issued by the executive power.

Art. 9. Inspectors shall be paid a salary of from 30 to 50 Peruvian pounds per month, as the executive power may determine, according to the importance of the lines with which they are connected.

Art. 10. In the concessions that the executive power may grant, within its powers, for the construction of railways, it shall establish the basis for the classification of freight, the rates which shall permit of the commercial and economic development of the region, and shall stipulate that said rates shall be revised every five years.

Art. 11. Companies infringing the conditions of articles 2, 3, 4, 5, and 6 of the present law and the regulations which the executive power may issue shall indemnify the passengers or the owners of freight for damages or losses suffered and shall pay to the executive power the fines the latter may impose, from Lp. 10 to Lp. 2,000 [" Lp." is abbreviation for Peruvian pounds], according to the seriousness of the violation.

Art. 12. Transportation companies may reduce their rates at any time, in the form they may think most convenient, communicating their desire to the executive power through the respective ministry.

Art. 13. After a railway has been in operation for five years, and for every five-year period thereafter, a revision of rates shall be made by agreement between the executive power and the companies.

If the executive power should think it necessary to lower the rates without injury to the interests of the companies, and the latter should not agree to the reduction, the reduction shall be put into effect by the promulgation of a law which shall guarantee to the companies the total revenues for the last year, and, furthermore, the average increase during the last five-year period. (Anales de Obras Públicas del Peru, 1918, p. 204.)

[Note.—A bill recently introduced in the Peruvian Congress provides that railway companies may be allowed two years in which to withdraw any rebates that may have been granted previous to the passage of the above law; and that rebates given since the enactment of this law must be extended to all shippers alike. The bill has been favorably reported by the Senate committee on railways, and will doubtless become a law.]

Later in the same year, on November 23, 1918, Law No. 2886, hich authorized the Government to invest the net profits of the obacco monopoly in railway construction and surveys for railways, as enacted. A copy of this law is as follows:

AW NO. 2886, OF NOVEMBER 23, 1918, PROVIDING FUNDS FOR RAILWAY CONSTRUCTION IN PERU; PROMULGATED NOVEMBER 29, 1921

ARTICLE 1. The net profits of the tobacco monopoly shall be invested in the xecution of railway construction and of surveys for railways authorized by xisting laws after the following deductions are made:

A. Expense of manufacture and administration.

B. Interest and amortization of the capital invested by the company conacting with the State for the administration of the monopoly, and which is xpended to separate the monopoly from the National Tax Collecting Co. (Comañía Recaudadora de Impuestos).

C. Interest and amortization of the bonds which may be issued, with the ollowing guaranty of the tobacco revenue, in accordance with the following rticle:

ART. 2. The executive power shall authorize the company which is formed administer the tobacco monopoly to issue bonds guaranteed by the revenues the same, which shall be denominated as "bonds of the tobacco revenue" bonos de la renta del tabaco), these bonds to earn up to 7 per cent interest er annum and 1 per cent for amortization, being exempt from all income xes, created or to be created.

ART. 3. The proceeds from the sale of said bonds shall be applied, in first stance, to the payment of the capital referred to in clause B of article 1 of is law, and, in the second instance, to the construction of railways.

ART. 4. Beginning with the first 15 days of the month of January, 1919, and uring successive years, or until the railways have been constructed and all oligations and guaranties made by the State for their construction are canled, by mortgaging the tobacco revenue, the administrating company shall eposit in the Caja de Depósitos y Consignaciones on the 15th and last days each month the net proceeds of the monopoly which may accrue to the overnment, after making the deductions referred to in article 1. There all likewise be deposited the proceeds from the sale of bonds issued for e construction of railways, in accordance with articles 2 and 3. The Caja Depósitos y Consignaciones will in turn set aside every two weeks, under responsibility, the proper percentage of the net proceeds to meet the amortition of the loans made by the banks to the Government, in accordance with ws Nos. 1698, 1982, and 2111.

When this amount has been deducted the Caja de Depósitos y Consignaciones all make no payment whatever from these funds except for work, material, laries, and wages, expropriations, and indemnities for railway works. In orders for payment the name of the railway must be specified, with pertint details.

ART. 5. The sums destined for the construction of railways can 'not be verted to purposes other than those specified in this law. The items assigned r this object in the general budget of the Republic shall be fixed and can t be used to make up deficiencies in any other items, on the responsibility the minister who authorizes it and of the officials who are involved in the eration. This responsibility shall be enforced in accordance with the contution and the laws.

The responsibility treated of in this article shall be made effective by popular tion before the Supreme Court, which will impose the proper penalties for e crime of misappropriation of public funds.

ART. 6. The executive power is hereby authorized to take all necessary meases to organize the company which is to administer the tobacco monopoly, in cordance with the provisions of this law.

ART. 7. The amount of the appropriation for railways fixed by this law can t be reduced for reasons of economy or in order to balance or adjust the dget.

Lima, November 23, 1918. Promulgated November 29, 1921.

Under date of October 30, 1923, article 2 of this law was modified as follows:

ARTICLE 1. Article 2 of Law No. 2886 is modified in the following form:

The executive power is authorized to issue bonds with the guaranty of the net revenues of the Estanco del Tabaco, which will be denominated "Bonds of the tobacco revenues."

These bonds will bear interest at a rate not exceeding 8 per cent per annum; will be amortized at a rate not exceeding 2 per cent per annum; and will be exempt from all present and future taxes.

ART. 2. The executive power is likewise authorized to solicit loans to be completed on a short period basis, fixing the rates of amortization with interest at a rate not exceeding 8 per cent per annum. These short-period loans can not exceed in total the sum of Lp. 100,000.

ART. 3. The products of the above loans will be applied exclusively to railroad construction.

According to these laws the funds derived from the net profits from the State Tobacco Monopoly (Estanco del Tabaco), which is a branch of the National Tax Collecting Agency (Compañía Recaudadora de Impuestos) are to be employed as above stated. The available funds are apportioned among the various lines by the Ministry of Fomento according to their needs. The net profits of the tobacco monopoly for the years from 1910 to 1924 were as follows:

1910	Lp. 169,813	1918	Lp. 412,404
1911	295,656	1919	425,047
1912	319,393	1920	427,183
1913	337,464	1921	420,098
1914	321,224	1922	442,687
1915	324,038	1923	423,808
1916	364,247	1924	591,231
1917	405,207		

Recently there has been another change in policy when the Government attempted to grant concessions covering large amounts of railway construction. These concessions which were to be granted included the donation by the Government of large sections of mineral lands.

On November 2, 1923, it was necessary for the Government, in order to make up a surplus incurred by railway construction (because insufficient funds were obtained from the tobacco monopoly), to decree as follows:

1. The Ministry of Hacienda will open a special account for the sum of Lp. 100,000, under the name of "Construcción de Ferrocarriles, Productos de 1924, Ley 4728" ("Railroad Construction, Products of 1924, Law 4728"), which will enable the Ministry of Fomento to attend the "libramientos" to be issued in payment of the above debts, as well as any other railway construction expenses that may originate during this year up to the aforementioned sum. These expenses will be paid with warrants which will be subject to the surplus of the tobacco revenues during 1924, and will be issued every three months beginning January 2, 1924, for a total sum not exceeding Lp. 30,000, in the form established by resolution of May 10.

2. It is declared that, should the Compañía Recaudadora de Impuestos discontinue the administration of the Estanco del Tabaco, the responsibility of the former will cease, in so far as the payment of the above obligations are concerned. The new company succeeding the present administration of the Estanco will be compelled to undertake the payment of the mentioned obligations.

3. The resolution of September 7 is hereby derogated. This resolution authorized the Ministry of Fomento to honor three drafts to the order of E. F. Wagner & Co., for the total sum of Lp. 80,000, with a view to procuring the necessary funds to carry on the engagements referred to in the present resolution.

IMPORTS OF RAILWAY EQUIPMENT

The following table shows the origin of railway equipment imported into Peru during the calendar years 1918–1924, inclusive:

Articles, by country of origin	1918		1919		1920		1921	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Rails and tools:	*Kilos*		*Kilos*		*Kilos*		*Kilos*	
United States	3, 400, 167	Lp.76,164	8, 038, 152	Lp.170,055	12, 831, 245	Lp.256,624	5, 074, 798	Lp.101,496
Great Britain	7, 817	175	5, 333	119	616, 096	12, 322	198, 987	3, 980
Chile	1, 200	27	7, 870	176	140, 551	2, 811	15, 553	311
Panama	5, 020	112	62, 919	1, 409				
Ecuador			2, 200	49				
Germany					10, 873	214	386, 905	7, 738
Belgium					330, 000	6, 600	1, 042, 159	20, 843
Bolivia					1, 242	25		
Brazil					7, 300	146		
France					1, 427	29	254, 975	5, 099
Netherlands					424, 027	3, 481	835, 263	16, 705
Italy							16, 208	324
Locomotives and portable engines:								
United States	179, 544	18, 829	252, 546	48, 061				
Chile			7, 365	1, 063				
Panama			17, 000	150				
Freight and passenger cars for railways or tramways:								
United States	15, 678	1, 120	29, 269	2, 857		146, 308		59, 039
Great Britain			2, 650	1, 010				22, 562
Germany						1, 587		7, 610
Belgium						818		5, 697
France						640		2, 446
Netherlands						6, 241		11, 253
Italy								5
Chile						227		
Ties:	*Number*		*Number*		*Number*		*Number*	
United States	206, 747	22, 742	193, 746	21, 312	303, 752	60, 750	181, 643	36, 329
Chile	4, 237	466	9, 678	1, 065	128, 896	25, 779	285, 301	57, 060
Ecuador	3, 678	405			587	117	4, 712	942
Colombia	8	1					33, 807	6, 761
Panama			12	1	8	2	6, 217	1, 243
Belgium		1					1, 800	360
Japan							34	7

Articles, by country of origin	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
Rails and tools:	*Kilos*		*Kilos*		*Kilos*	
United States	1, 152, 102	Lp.25, 636	2, 438, 202	Lp.29, 005	1, 976, 278	Lp.29, 177
Great Britain	4, 366, 496	54, 163	2, 491, 671	32, 069	1, 043, 434	15, 101
Chile	25, 257	343			4, 547	110
Panama			4, 823	56		
Ecuador					154, 553	581
Germany	728, 258	24, 194	305, 326	9, 657	1, 161, 712	20, 314
Belgium	2, 401, 974	33, 929	5, 534, 070	56, 045	6, 024, 736	68, 527
France	1, 550	70			115, 470	1, 190
Netherlands	1, 295, 714	19, 546	1, 678, 954	14, 374	829, 705	8, 699
Argentina	533	23				
Locomotives and portable engines:						
United States			60, 353	6, 632	190, 215	32, 258
Germany			18, 500	1, 211	206, 625	18, 323
United Kingdom			82, 488	10, 374	33, 454	4, 144
Freight and passenger cars for railways or tramways:						
United States	127, 661	32, 087	575, 301	36, 096	999, 920	53, 504
Great Britain	36, 429	2, 314	35, 071	2, 313	164, 252	7, 615
Germany	150, 535	11, 830	115, 843	4, 150	208, 133	6, 471
Belgium			60, 086	3, 441	31, 310	963
France	2, 378	414				
Netherlands	78, 152	2, 677	4, 690	91	174, 473	4, 921
Chile			3, 790	309	1, 832	78
Uruguay		730				
Ties:	*Number*		*Number*		*Number*	
United States	114, 630	13, 174	169, 938	42, 790	209, 982	60, 780
Chile	251, 296	30, 535	335, 622	11, 598	262, 176	32, 581
Ecuador			12, 510	3, 043	110	19
Colombia	9, 793	1, 778	38, 252	4, 138	55, 701	4, 888
Argentina			3	1		
Germany			100	170		

The following pages contain a description of all the Peruvian Corporation and affiliated lines, the Government-owned lines, and the lines owned and operated by private individuals and companies.

PERUVIAN CORPORATION (LTD.)

SURVEY OF DEVELOPMENT

In order to finance railway construction, the Peruvian Government, in 1869, 1870, and 1872, floated large bond issues in London. Peru's nitrate and guano exports were given as security for this loan, but these resources proved inadequate. In spite of numerous retrenchments, as the Government had no other sources of revenue, interest payments on the external debt had to be suspended in 1876. As a result of the war with Chile which broke out in 1879, Peru lost the nitrate beds of Tarapaca and the southern guano deposits. The creditors pressed for some form of adjustment of the outstanding obligations, which in 1888–89 had increased to £31,843,760 principal and £22,998,651 accrued interest.

On January 11, 1890, the Government of Peru signed what is known as the Grace-Donoughmore contract, by which the committee of Peruvian bondholders, affiliated with the Corporation of Foreign Bondholders, assumed all responsibility for the bond issues of 1869, 1870, and 1872 in return for concessions granted them by the Peruvian Government. This contract contained 35 articles, the substance of which follows:

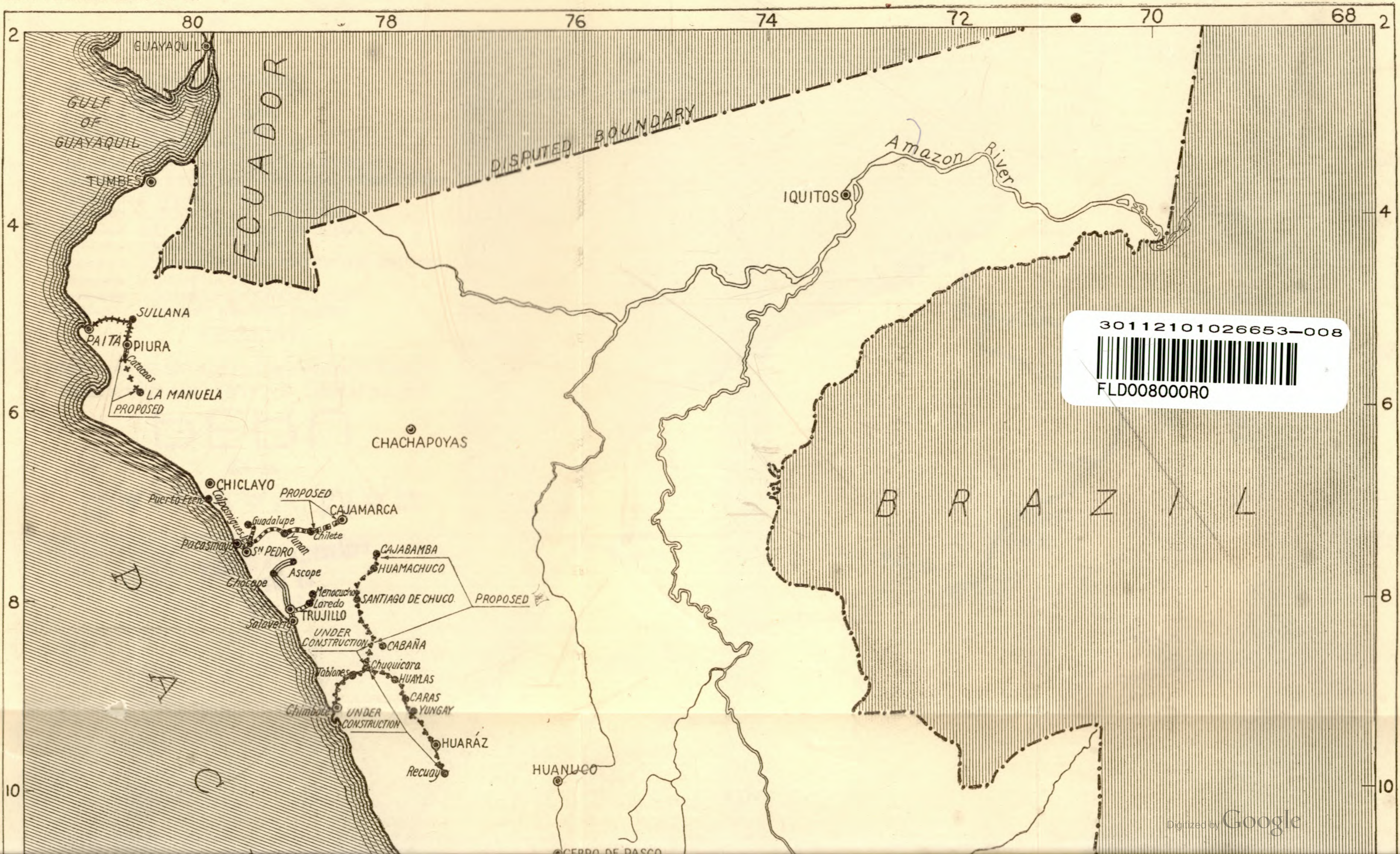
Cancellation of debt.—The committee of Peruvian bondholders agrees to relieve Peru of all responsibility for the bond issues of 1869, 1870, and 1872, all bonds to be registered with the committee and stamped to that effect.

Railway concession.—The Government cedes all State railways (1,254 kilometers) to the committee for a term of 66 years. These railways are the Paita-Piura, the Pacasmayo-Yonan-Guadalupe, the Salaverry-Trujillo-Ascope, the Chimbote-Suchiman, the Central (Callao to Chicla and Lima to Ancon), the Pisco-Ica, and the Southern (Mollendo through Arequipa to Puno and Santa Rosa). (The Paita-Piura and the Pisco-Ica are subject to previous contracts and can not be turned over to the committee immediately.) The bondholders are given, for five years, the exclusive right to construct extensions to these lines; free grants of all necessary Government land; free use of the quays at Mollendo, Pisco, Ancon, Chimbote, Pacasmayo, Salaverry, and Paita; exemption from import duties on railway material for construction and operation, including coal. The Government is to settle all prior claims against any of the railways ceded to the committee. Specified rates are to be charged unless the current exchange rate of the silver sol should fall, in which case rates may be raised proportionately. The committee assumes a list of specific claims of constructors and lessees and the Government cedes a list of specific sums owing by constructors and lessees. The committee agrees to extend the Central to Oroya within three years; to extend the Southern from Santa Rosa to Marangani within two years and on to Sicuani within two more years; to construct, within six years, 160 kilometers of railway selected from a long list of possible extensions and new lines; and to repair and open all ceded lines within two years. The committee is to be penalized if these extensions are not completed within the stipulated time.

Titicaca concession.—The committee receives the right to operate the line of Government steamers on Lake Titicaca for a term of 66 years on condition that the vessels sail under the Peruvian flag and be manned by Peruvian officers. The committee may purchase the steamers from the Government.

Telegraph and telephone concession.—The committee may operate all telegraph and telephone lines along the railways and all such lines that may be built in the future. This concession is to last for 66 years.

Guano concession.—The committee may extract from Peruvian territory and export 3,000,000 tons of guano on condition that the Southern Railway be extended to Cuzco within eight years. If this railway is not completed within



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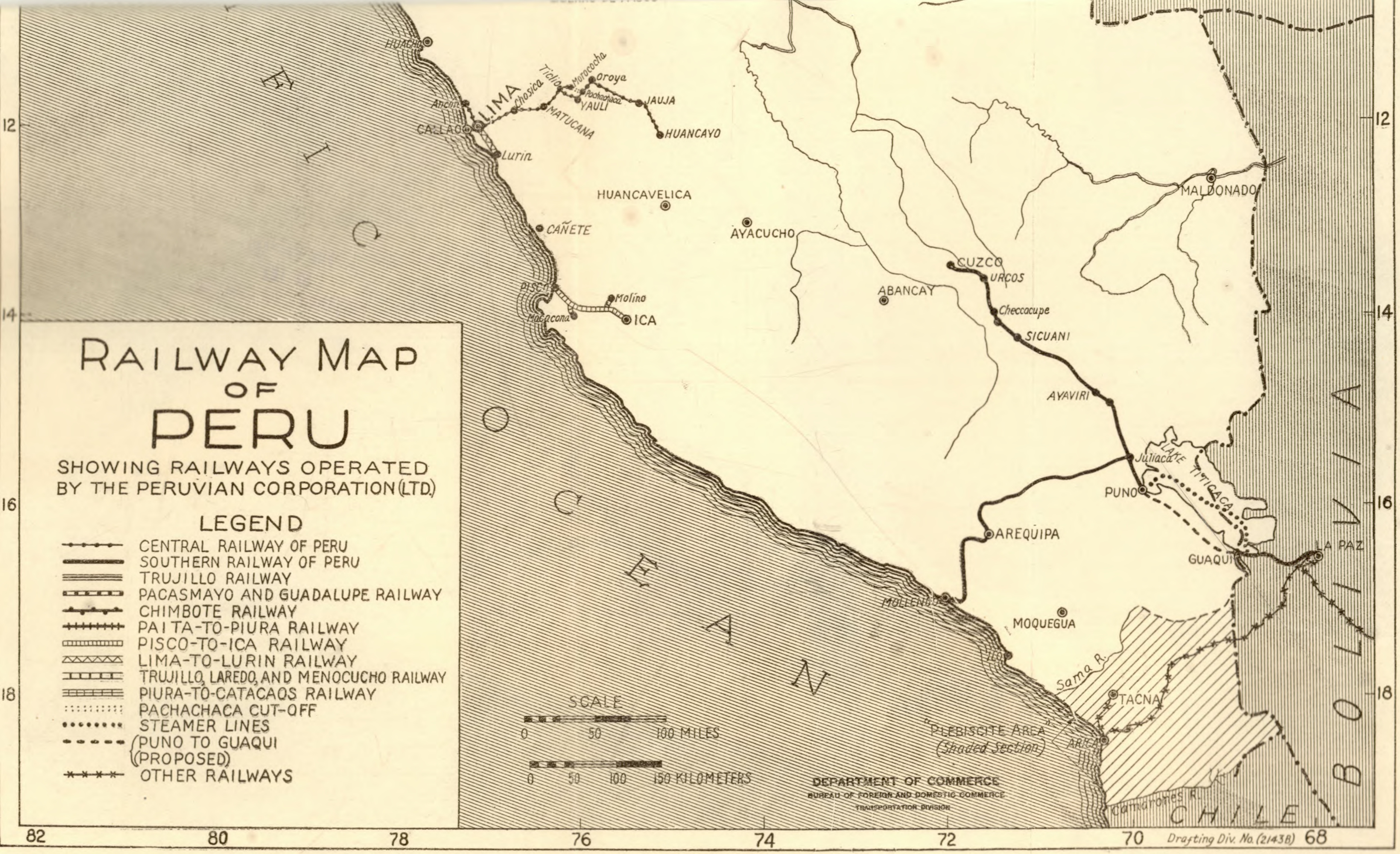

FIG. 12

104289°—27. (Face p. 200.)

the stipulated time, the amount shall be reduced by 1,000,000 tons. The Government reserves the guano of the Chincha Islands for its own use. Until the bondholders shall have taken out their full allotment of guano the Government pledges itself not to extract any for export or to allow any private parties to do so. The Government reserves the right to extract enough for the use of national agriculture. In an agreement signed January 8, 1890, Chile granted the following concessions to Peru on condition that they be transferred to the bondholders: (1) Right to extract guano from specified deposits upon which the canceled loans had been guaranteed and which had been won by Chile in the war of 1879–1883. (2) Eighty per cent of the proceeds of the sale of guano from these deposits since February, 1882, amounting to about £490,000, to be paid in Chilean Government bonds. (3) The sum of £558,565 deposited in the Bank of England which represented the 50 per cent of certain guano sales promised Peru at the end of the war.

Annuities.—The Government agrees to pay the committee 30 annuities of £80,000 each. These annuities shall commence in 1893 and be guaranteed on the custom revenues of the port of Callao.

Right to create administrative company.—The bondholders may create a company to administer all their concessions. This company must be English.

Mortgage privilege.—The company may mortgage the railways and guano for not more than £6,000,000.

In accordance with the Grace-Donoughmore contract, the committee of Peruvian bondholders organized a company known as the Peruvian Corporation (Ltd.) on March 20, 1890. This company was to administer all holdings in Peru. The company was incorporated under an authorized capitalization of £7,500,000 4 per cent cumulative preference stock and £9,000,000 ordinary stock, which was issued in exchange for the bonds of 1870 and 1872 as follows:

The bondholders of the 1870 loan received a cash payment of about 3 per cent from the Chilean cash contribution, 24 per cent in preference shares, and 30 per cent in ordinary shares. The holders of the 1872 bonds received about 2½ per cent in cash, 20 per cent in preference stock, and 25 per cent in ordinary stock.

Of the ordinary stock issued the entire amount is still outstanding. The £7,500,000 4 per cent cumulative preference stock on June 30, 1922, was in arrears of 100⅞ per cent. At various times the corporation has issued £5,400,000 of £6,000,000 debentures authorized in the Grace-Donoughmore contract, of which £4,351,300 were outstanding on June 30, 1922. Some of these bonds were issued for cash, others in discharge of obligations, in exchange for bonds of the National Pisco-to-Ica Railway loan, and for repairs of existing railways and rolling stock. The bonds were secured without trust deed as a floating charge of the undertaking and revenues. The holders of the Peruvian bonds were given the choice of exchanging their bonds for the Peruvian Corporation (Ltd.) 6 per cent debentures or holding them pending delivery of the Chilean cash contribution, against which they held the first lien.

This corporation transferred each railway and navigation system to a separate subsidiary company, receiving shares in exchange. The shares of each subsidiary were issued as shares fully paid up, seven-ninths being held by the corporation and two-ninths appropriated in settlement of claims of former contractors and lessees. Seven lines were turned over to the company in this manner, five of which are operated by companies controlled by the corporation and the other two under separate agreement; these seven are:

Central Railway and Ancon branch, including the Morococha branch and the Oroya-Huancayo extension, the latter inaugurated in September, 1908, operated by the Central Railway of Peru (Ltd.), in which the corporation holds £1,333,327 ordinary stock; 111 miles.

Southern Railway (including the Cuzco extension, inaugurated in September, 1908), operated by the Southern Railway of Peru (Ltd.), in which the corporation holds £2,224,800 ordinary stock; 407 miles.

Trujillo Railway, operated by the Trujillo Railway (Ltd.), in which the corporation holds £439,993 ordinary stock; 57 miles.

Paita-to-Piura Railway, operated by the Paita-to-Piura Railway (Ltd.), in which the corporation holds £56,522 ordinary stock; 60 miles.

Pacasmayo & Guadalupe Railway (including the extension to Chilete), operated by the Pacasmayo & Guadalupe Railway (Ltd.), in which the corporation holds £199,693 ordinary stock; 56 miles.

Chimbote Railway; administers road as far as Tablones in its own right; remainder under special contract with the Peruvian Government; 32 miles.

Pisco-to-Ica Railway, which is leased to Messrs. Calderon; 46 miles.

In addition, as provided for in the original contract, the corporation owns and operates a fleet of steamships on Lake Titicaca. These ships are run in connection with the trains of the Southern Railway which are operated as far as Punta on Lake Titicaca, passengers then being transferred to the steamers which carry them to Guaqui on the Bolivian side of the lake and from Guaqui to La Paz by rail. The entire route is under the control of the Peruvian Corporation.

Many disputes arose in connection with the contract, and on June 20, 1907, the Government formed a new contract with the Peruvian Corporation. The principal features of this contract were as follows:

(1) All reciprocal claims were canceled, with the exception of the claim for the Cerro de Pasco mines and the responsibility of Peru's debt to Chile.

(2) The life of the concession was extended for 17 years, or until 1973, during which extension the corporation is to pay the Government 50 per cent of the net profits accruing from the operation of the railroads, inclusive of the extensions to be built, and the boats on Lake Titicaca.

(3) Thirty annual subsidies of £80,000 were agreed to by the Government, beginning in July, 1907, guaranteed by a special tax on sugar consumption which had been levied on March 26, 1904, and which may not be abolished without the corporation's consent.

(4) The corporation to pay the exchequer contributions amounting to £12,000 per annum during 10 years, 1907 to 1917; £15,000 per annum during each of the succeeding 10 years, 1917 to 1927; £20,000 during the third 10 years, 1927 to 1937; and thenceforth all amounts in accordance with the Peruvian laws.

(5) The corporation to construct the following lines by September, 1908:

Oroya to Huancayo (extension of the Central Railway).
Sicuani to Cuzco (extension of the Southern Railway).
Yonan to Chilete (extension of the Pacasmayo Railway).

The total distance of these lines being about 300 kilometers, which also was to replace the 160 kilometers that should have been constructed in compliance with the first contract of January 11, 1890.

(6) The corporation to return to the Government in cash the amount received for the construction of the Oroya-to-Huari section (Oroya and Huancayo extension) and the Sicuani-to-Checacupe section (Sicuani-to-Cuzco extension) and to reimburse the Government such sums as it has already expended on works for the completion

of the unfinished portions of each of these sections, amounting to £61,657.

The corporation also undertook to take over the contracts entered into by the Government for supply of railway material.

Mutual concessions in regard to tariffs (which are subject to revision every five years), taxation, exchange rates, and other details were made.

The provisions of this last contract have been fairly well adhered to by both the parties and are still operative. After the construction of the Huancayo, Cuzco, and Chilete extensions the Peruvian Corporation practically ceased to build additional mileage, and subsequent construction has been undertaken almost entirely by the Government. The corporation purchased outright the Guaqui-La Paz Railway at a cost of £395,691. The road is 60 miles in length, and this is not affected by any of the agreements. (For information on this road see chapter on Bolivia.) The other activities of the company, such as the guano concessions, colonization, oil schemes, etc., are not related to the subject matter of this report.

OPERATING OFFICIALS

The officials of the company on June 30, 1923, were as follows:

Directors:
- G. Acton Davis, chairman.
- Oliver R. H. Bury, M. I. C. E., managing director.
- W. H. Van Eeghen.
- W. S. Eyre.
- L. H. Kiek.
- Jacques Kulp, M. C.
- Brig. Gen. Guy Lubbock, C. M. G., D. S. O.
- Alfred Naylor.

Representative in Peru, A. S. Cooper, C. B., C. M. G.
Bankers, Coutts & Co., 15 Lombard Street, E. C. 3, London, England.
Solicitors, Smiles & Co., 15 Bedford Row, W. C. 1, London.
Consulting engineers, Livesey, Son & Henderson, 14 South Place, E. C. 2, London.
Auditors, Duncan, Allwork & Co., 399 Salisbury House, E. C. 2, London.
Secretary, Henry D. Yates.

PURCHASES

The method used by the Peruvian Corporation (Ltd.) for the purchase of supplies for any one of the roads under their control and operation is as follows:

All import orders for goods destined for any one of the roads in Peru operated by the Peruvian Corporation are placed through the main office of the corporation in London. Goods from local stocks are purchased directly by the purchasing agent for each road, as a general rule.

In other words, all large and important orders are placed through London, this including coal, rolling stock, etc. To a certain extent these purchases are based on recommendations or requisitions from local officials of the corporation and the various railways in Peru. The local officials are, however, always subject to overruling by the London office. A recent instance of this was the case of four locomotives for the Central Railway. Local officials of the line distinctly specified a certain type of locomotive, best obtainable from an American company, as the engine best suited to the needs of the road. Despite this fact, after an exchange of correspondence on the subject, the London office insisted on supplying British locomotives of different type.

The most important line operated by the Peruvian Corporation is the Central Railway. This road has its own purchasing agent in the head office of the railway at Lima, and this official buys all goods which are obtainable from stocks on hand locally. This includes all such articles as provisions, small machine-shop equipment, tools, etc. This is also true in the case of railway ties from the United States, Chile, and Colombia, but, so far as can be ascertained, no other orders from abroad are placed by the local office.

The Southern Railway and the other smaller lines operated by the Peruvian Corporation purchase locally such supplies as are immediately obtainable in their own territories at favorable prices, but all Lima buying is handled for them by the Lima office of the corporation. Actually most of this buying is done in Lima, as better prices are usually obtainable there than in the interior cities.

The best method to be followed by anyone desiring to sell to these roads is probably to approach or correspond with both London and Lima, unless stocks of the product are kept in Lima, in which case efforts may be concentrated on the purchasing agent of the Central Railway in Lima, or the Lima office of the Peruvian Corporation in the case of the other lines.

FINANCES

The following table indicates in Peruvian soles and pounds sterling the result of the working of the railways and steamers for the indicated fiscal years ended June 30:

Years	Gross receipts	Working expenses	Net receipts	Rate of exchange, Peruvian soles	Net receipts in sterling
	Peruvian soles	*Peruvian soles*	*Peruvian soles*	*Pence*	
1890–91	1, 840, 008	1, 244, 733	595, 275	37	£91, 771
1891–92	2, 487, 292	1, 514, 468	972, 824	34	137, 816
1892–93	2, 284, 865	1, 535, 847	749, 018	29	90, 506
1893–94	2, 522, 920	1, 749, 888	773, 032	25	80, 524
1894–95	2, 577, 064	1, 622, 621	954, 443	24½	97, 432
1895–96	3, 027, 760	1, 992, 937	1, 034, 823	24	103, 482
1896–97	3, 230, 479	2, 331, 317	899, 162	22¾	85, 233
1897–98	3, 324, 335	2, 181, 449	1, 142, 886	23⅞	113, 098
1898–99	3, 528, 334	2, 277, 201	1, 251, 133	24⅛	124, 461
1899–1900	4, 251, 504	2, 503, 180	1, 748, 324	24¼	175, 743
1900–01	4, 887, 367	2, 900, 476	1, 986, 891	24	200, 758
1901–02	5, 017, 754	3, 233, 271	1, 779, 483	24¼	177, 948
1902–03	5, 436, 000	3, 412, 695	2, 023, 305	24¼	204, 438
1903–04	5, 874, 109	3, 680, 740	2, 193, 369	24¼	221, 621
1904–05	6, 636, 505	4, 306, 583	2, 329, 922	24½	237, 846
1905–06	7, 667, 581	5, 268, 422	2, 399, 159	24½	244, 914
1906–07	8, 581, 661	6, 300, 353	2, 281, 308	24¼	232, 883
1907–08	10, 072, 684	7, 918, 593	2, 154, 091	23¾	217, 652
1908–09	9, 969, 885	7, 461, 525	2, 508, 360	24	248, 223
1909–10	9, 164, 770	5, 829, 180	3, 335, 590	24	333, 559
1910–11	11, 049, 346	6, 386, 700	4, 662, 646	24⅛	468, 693
1911–12	10, 746, 927	6, 413, 973	4, 332, 954	24½	435, 552
1912–13	11, 523, 024	7, 115, 050	4, 407, 974	23⅞	438, 501
1913–14	12, 336, 249	7, 820, 138	4, 516, 111	23⅞	449, 259
1914–15	8, 304, 769	5, 669, 953	2, 634, 816	22	241, 524
1915–16	9, 970, 002	6, 105, 365	3, 864, 637	23	370, 361
1916–17	11, 358, 167	7, 535, 242	3, 822, 925	25⅛	400, 212
1917–18	12, 869, 337	8, 492, 614	4, 376, 723	26½	483, 263
1918–19	12, 828, 525	9, 082, 070	3, 746, 455	26½	413, 671
1919–20	14, 928, 283	11, 230, 822	3, 697, 461	29¼	450, 628
1920–21	14, 823, 819	11, 208, 339	3, 615, 480	27¾	418, 039
1921–22	15, 777, 760	10, 697, 053	5, 080, 707	21	444, 561
1922–23	15, 906, 784	11, 347, 107	4, 559, 677	22	417, 970
1923–24	17, 287, 845	11, 506, 058	5, 781, 787	22	529, 997

Of the above table the net traffic receipts were made up by each railroad, as follows:

Railways	1913–14	1917–18	1918–19	1919–20	1921–22	1922–23	1923–24	1924–25
Central Railway (including Huancayo extension and Morococha branch)	£213, 089	£326, 193	£258, 743	£294, 087	£245, 142	£200, 257	£273, 584	£88, 265
Southern Railway (including Cuzco extension)	129, 498	65, 319	60, 772	72, 905	121, 923	126, 793	140, 543	149, 259
Guaqui-La Paz Railway	38, 177	8, 700	5, 436	----------	2, 641	1, 715	9, 819	7, 279
Lake steamers	23, 244	17, 884	13, 156	11, 659	10, 731	14, 763	8, 788	13, 945
Navigation of River Desaguadero	83	----------	----------	----------	----------	----------	----------	----------
Trujillo Railway	24, 507	27, 283	30, 213	29, 693	21, 297	27, 066	41, 698	17, 406
Paita-to-Piura Railway	14, 888	18, 417	21, 390	18, 595	21, 881	26, 165	30, 381	16, 192
Pacasmayo Railway (including Chilete extension)	3, 923	9, 410	10, 862	7, 800	13, 182	12, 477	13, 572	4, 447
Chimbote Railway	----------	1, 738	3, 721	3, 321	415	594	3, 443	----------
	447, 409	474, 944	404, 293	438, 060	437, 21[illegible]	409, 830	521, 828	296, 793
Deduct debit:								
Chimbote Railway	5, 396	----------	----------	----------	----------	----------	----------	----------
Guaqui-La Paz Railway	----------	----------	----------	485	----------	----------	----------	2, 693
	442, 013	474, 944	404, 293	437, 575	437, 212	409, 830	521, 828	294, 100
Add: Rent of Pisco-to-Ica Railway in hands of lessee	7, 246	8, 319	9, 378	13, 053	7, 349	8, 140	8, 169	8, 176
Total	449, 259	483, 263	413, 671	450, 628	444, 561	417, 970	529, 997	302, 276

A comparison of the balance sheets and revenue accounts of the road for the fiscal years ended June 30, 1914, and June 30, 1924, is presented below:

BALANCE SHEET AT JUNE 30, 1914

Dr.:				
Capital authorized—				
7,500,000 4 per cent cumulative preference shares of £1 each	£ 7, 500, 000			
9,000,000 ordinary shares of £1 each	9, 000, 000			
(Converted into stock by resolution of general meeting of shareholders held on Dec. 3, 1891)	16, 500, 000			
Capital issued—				
4 per cent cumulative preference stock	7, 500, 000			
Ordinary stock	9, 000, 000			
		£	s.	d.
		16, 500, 000	0	0
Debentures as per last account	5, 176, 000			
Less amortized at 105 per cent	64, 250			
		5, 111, 750	0	0
Sundry creditors and credit balances		116, 049	6	0
Bills payable		14, 780	3	3
Interest on £5,400,000 debentures accrued to June 30, 1914, and debenture amortization reserve		81, 000	0	0
Dividend warrants outstanding		2, 789	3	6
Debenture interest coupons outstanding		2, 815	6	6

Dr.—Continued.

	£	s.	d.
Sinking fund: Debentures redeemed and interest applicable to amortization	291,137	0	0
Reserve account	650,000	0	0
Lake steamers and fire-insurance accounts	46,549	13	1
Net revenue account	383,120	9	11
Carried forward	23,199,991	2	3

Cr.:

	£	s.	d.	£	s.	d.
Cost of the various properties and concessions acquired under or in connection with the contract for conversion of the Peruvian external debt, being accounts incurred in discharging the obligations undertaken by the said contract, the expenditure to date in developing the several undertakings and the proportion of costs of issuing debentures, including discounts on issues of capital (£892,840), after deducting the value of the railway stocks, as mentioned below, viz: Amount as per last account				12,772,304	14	8
Stocks and shares in companies—						
Southern Railway of Peru (Ltd.), ordinary stock	2,224,800					
Central Railway of Peru (Ltd.), ordinary stock	1,333,327					
Trujillo Railway (Peru) (Ltd.), ordinary stock	439,993					
Pacasmayo & Guadalupe Railway (Peru) (Ltd.), ordinary stock	199,693					
Paita-to-Piura Railway (Peru) (Ltd.), ordinary stock	53,100					
Peruvian Cotton Manufacturing Co. (Ltd.), 840 ordinary shares, as per last account	600					
New Chosica Land Co. (Peru), at cost in Peruvian currency (8,100 soles)	810					
				4,252,323	0	0
Expenditure in respect of reconstruction and extension of the above railways				4,859,692	8	4
Purchase of, and expenditures on, Guaqui-La Paz Railway—						
As per last account	371,938	5	5			
Add expenditure for past year	25,078	3	5			
				397,016	8	10
Carried forward				22,281,336	11	10

BALANCE SHEET FOR YEAR ENDED JUNE 30, 1925

Dr.:

	£	£	s.	d.
Capital authorized and issued—				
£4 per cent cumulative preference stock	7,500,000			
Ordinary stock	9,000,000			
		16,500,000	0	0
Debenture bonds—				
Amount issued	5,400,000			
Less amortized at 105 per cent	1,277,750			
		4,122,250	0	0
Sundry creditors and credit balances		248,929	13	4
Income-tax reserve		22,480	6	0
Interest on £5,400,000 debentures accrued to June 30, 1925, and debenture amortization reserve		108,000	0	0

Dr.—Continued.

	£	s.	d.
Dividend warrants and debenture interest coupons outstanding	6,768	7	10
Sinking fund—Debentures redeemed and interest accrued applicable to amortization (of which £762,557 is in respect of the bonds served by the subcompanies)	1,290,315	11	8
Reserve account	700,000	0	0
Lake steamers and insurance accounts	161,466	12	11
Net revenue account	235,757	10	9
Total	23,395,968	2	6

Cr.:

	£	s.	d.	£	s.	d.
Cost of the various properties and concessions acquired under or in connection with the contract for conversion of the Peruvian external debt, being accounts incurred in discharging the obligations undertaken by the said contract, the expenditure to date in developing the several undertakings, and the proportion of costs of issuing debentures, including discounts on issue of capital (£892,840), after deducting stocks held by the corporation in the railways referred to below, viz—						
Amount as per last account	14,389,703	19	10			
Less amount written off in net revenue for Chira irrigation	36,000	0	0			
				14,353,703	19	10
Ordinary stocks in railway at par value or cost				4,254,375	0	0
Expenditure in respect of reconstruction and extension of the several railways in respect of which the subcompanies are liable to the corporation for a corresponding amount of the debentures of the corporation				3,222,700	0	0
Mollendo port improvement—						
Expenditure contract with Peruvian Government, as per last account	119,607	4	6			
Less sinking fund	20,465	11	11			
				99,141	12	7
Real estate in Peru				27,311	14	9
Office furniture, London and Peru				1,930	9	2
Stores, materials, and produce in hand certified by officials of corporation				42,679	18	4
Current accounts of railway companies (less reserve)				440,750	19	6
Government of Peru, freight accounts, etc				133,929	19	5
Sundry debtors and debit balances				108,328	17	8
Investments in British Government and Indian Government securities at or under market value (market value at June 30, 1925, £291,531)				284,389	4	5
Bills receivable, in hand and in transit				89,081	10	2
Cash, London and Peru (including amounts on special deposit)				337,644	16	8
Total				23,395,968	2	6

NOTE.—The arrears of dividend accrued on the preference stock amounted, at June 30, 1925, to £106 12s. 6d. per cent.

REVENUE ACCOUNT FOR THE YEAR ENDED JUNE 30, 1914

Dr.:

	£	s.	d.	£	s.	d.	£	s.	d.
Administration expenses, as under, viz—									
Peru—									
Salaries, etc	13,218	13	6						
Law charges and expenses	2,438	10	4						
Office rent and expenses, cables, printing, stationery, and miscellaneous	4,236	12	4						
				19,893	16	2			
London—									
Directors' fees	4,800	0	0						
Salaries, etc	3,212	5	1						
Auditors	105	0	0						
Office rent and expenses	1,925	3	1						
Law charges	1,003	7	8						
Printing, stationery, bill stamps, cables, and miscellaneous	875	10	7						
				11,921	6	5			
				31,815	2	7			
Less amount charged to the accounts of the railway companies				10,000	0	0			
							21,815	2	7
Perene colonization account							4,771	7	6
Interest paid and accrued to June 30, 1914, on debentures, as fixed by resolution of the meeting of debenture holders on March 12, 1896, including amount available for amortization							216,000	0	0
Balance carried to net revenue account							409,543	4	11
Total							652,129	15	0

Cr.:

	£	s.	d.	£	s.	d.
Amounts accruing to the corporation out of the net income of the railway companies and from the navigation of Lake Titicaca and the River Desaguadero, viz—						
Central Railway	210,553	17	3			
Southern Railway	126,981	2	4			
Guaqui-La Paz Railway	38,176	10	0			
Lake Titicaca steamers	23,244	15	6			
Trujillo Railway	18,486	5	4			
Paita Railway	9,317	0	0			
Pacasmayo Railway	2,961	6	7			
Pisco-to-Ica Railway	7,246	18	5			
River Desaguadero Navigation	83	12	5			
	437,051	7	10			
Less debit, Chimbote Railway	5,396	19	6			
				431,654	8	4
Annuity received from Government of Peru				80,000	0	0
Guano account				126,642	0	8
Interest, exchange, and miscellaneous				13,590	5	0
Registration fees				243	1	0
Total				652,129	15	0

REVENUE ACCOUNT FOR THE YEAR ENDED JUNE 30, 1925

	£	s.	d.	£	s.	d.	£	s.	d.
Dr.:									
Administration expenses as under, viz—									
Peru—									
Salaries, etc	18,798	0	0						
Law charges and expenses	672	14	8						
Office rent and expenses, cables, printing, stationery, and miscellaneous	5,113	0	3						
				24,583	14	11			
London—									
Directors' fees	5,500	0	0						
Salaries, etc	7,305	0	0						
Auditors	210	0	0						
Office rent and expenses	3,991	3	11						
Law charges	1,048	13	1						
Printing, stationery, bill stamps, cables, and miscellaneous	1,172	18	5						
				19,227	15	5			
				43,811	10	4			
Less amount charged to the accounts of the railway companies				10,500	0	0			
							33,311	10	4
Exchange account							11,133	9	10
Debenture interest at 4 per cent on £5,400,000—									
Interest paid				168,813	0	0			
Sinking fund				47,187	0	0			
							216,000	0	0
Balance carried to net revenue account							241,867	11	7
Total							502,312	11	9
Cr.:									
Amounts accruing to the corporation out of the net income of the railway companies and from the navigation of Lake Titicaca—									
Central Railway				70,099	16	2			
Southern Railway				139,326	6	11			
Guaqui-La Paz Railway				5,779	3	1			
Lake Titicaca steamers				13,944	17	4			
Trujillo Railway				17,717	0	0			
Paita Railway				8,426	2	0			
Pacasmayo Railway				1,280	2	4			
Pisco-to-Ica Railway				8,276	13	3			
				264,850	1	1			
Less debit the Chimbote Railway				2,684	12	7			
							262,165	8	6
Guano account							110,244	0	6
Annuity received from Government of Peru							80,000	0	0
Perene colonization account							7,304	8	6
Interest and miscellaneous							42,022	16	9
Registration fees							575	17	6
Total							502,312	11	9

NET REVENUE ACCOUNT FOR YEAR ENDED JUNE 30, 1914

Dr.:	£	s.	d.
Lake Titicaca steamers insurance account	4,000	0	0
Coal exploration	22,640	5	7
Amortization of debentures	54,000	0	0
Income tax	6,164	10	10
Balance carried down	383,120	9	11
Total	469,925	6	4

Cr.:	£	s.	d.	£	s.	d.	£	s.	d.
Balance from last year				361,086	6	4			
Deduct—									
Amount carried to reserve account out of earnings for 1912–13	25,000	0	0						
Dividend on preference stock declared at general meeting on December 18, 1913	167,704	4	11						
Additional debenture interest of 2 per cent paid with coupon of April 1, 1914, including amount available for amortization	108,000	0	0						
				300,704	4	11			
							60,382	1	5
Balance of revenue to June 30, 1914							409,543	4	11
							469,925	6	4
Balance brought down							383,120	9	11

NET REVENUE ACCOUNT FOR YEAR ENDED JUNE 30, 1925

Dr.:	£	s.	d.
Amortization of debentures [1]	54,000	0	0
Additional interest and sinking fund accrued to June 30, 1925, under new debenture arrangement	27,000	0	0
Expenses in connection with new debenture arrangement	5,811	1	3
Chira irrigation canal	36,000	0	0
Balance carried down	235,757	10	9
Total	358,568	12	0

Cr.:		£	s.	d.	£	s.	d.	£	s.	d.
Balance from last year					448,486	11	3			
Deduct—										
Dividend on preference stock declared at general meeting on December 15, 1924		223,785	10	10						
Additional debenture interest on £5,400,000—										
Interest paid	£84,407									
Sinking fund	23,593									
		108,000	0	0						
					331,785	10	10			
								116,701	0	7
Balance of revenue to June 30, 1925								241,867	11	5
								358,568	12	0
Balance brought down								235,757	10	9

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[1] The actual amount set aside for amortization of debentures was £124,780. In this sum was included £70,780 interest on redeemed debentures charged in revenue and net revenue account.

A detailed description and account of each of the roads in Peru operated by the Peruvian Corporation (Ltd.) follows. The roads and their mileage are:

	Miles
Under contracts of 1890 and 1907:	
Central Railway of Peru	250
Southern Railway of Peru	569
Trujillo Railway	69
Pacasmayo and Guadalupe Railway	83
Chimbote Railway	35
Paita-to-Piura Railway	60
Pisco-to-Ica Railway	46
Total	1,112

	Miles
Under special contracts:	
Lima-to-Lurin Railway	28
Trujillo, Laredo & Menocucho Railway	67
Piura-to-Catacaos Railway	9
Pachachaca cut-off (see Central Railway)	10
Chimbote Railway (see description under above)	33
Total	147
Total, Peruvian Corporation lines	1,259

CENTRAL RAILWAY OF PERU

SURVEY OF DEVELOPMENT

The initial steps for constructing the Central Railway of Peru were taken in compliance with the law of April 11, 1861, authorizing the Government to construct a line from Lima to La Jauja Valley.

In 1868 Henry Meiggs's offer to make a preliminary survey of the "Central Transandine Railway," as the Lima & La Jauja Railway was called, was accepted, and on April 3, 1869, it was reported that the estimated cost would be approximately 27,000,000 soles. The construction of the railway, which was to be paid for with 22,000,000 soles worth of 6 per cent bonds, was intrusted to Meiggs on December 18, 1869. Six years were allowed for building the line. Amortization at 2 per cent was to begin 10 years after the issue of the bonds. All sources of income and a mortgage on the national properties were to guarantee the payment of these bonds.

Work had hardly commenced in 1870 when the Government thought of extending the line. On September 22, 1868, and on January 31, 1870, the Government issued decrees authorizing surveys of branches to Cerro de Pasco, Ayacucho, and places on navigable tributaries of the Amazon River. On June 4, 1870, it authorized an extension through La Jauja and Ayacucho to Huancayo.

In the meantime construction work was proceeding steadily and sections were opened as far as San Bartolome in September, 1871, leaving 75 miles to complete. Meiggs paid the Government 2,000 soles monthly as rental for the open section. In 1876 a total of 88 miles of track had been laid, extending to Chicla, the highest point along the right of way, at 1,600 feet above sea level.

Meiggs died in 1877, and on May 21, 1878, his executors transferred all his rights and obligations relative to the construction of the Central Railway, its extension to Cerro de Pasco, and the working of the railway and mining works covered by the concessions, to a new company, Compañía del Ferrocarril de la Oroya y Mineral de Pasco. A contract was signed with the Government on April 13, 1880, by which this company agreed to complete the unfinished portion of the works, which had cost nearly £5,000,000 and which were to cost an additional 2,400,000 soles. Of this sum 1,800,000 soles was for the line as far as Pasco. The Government guaranteed 7 per cent of this stretch. Financial difficulties interfered and the company had some trouble with the Government. After eight months' traffic on the even stretch as far as Chicla the line between San Bartolome and Chicla was washed away by floods.

On October 25, 1886, the Government passed a law relative to purchasing the line. Because of the war with Chile, however, the Government's finances would not permit such expenditure. The company also claimed that the war prevented compliance with its obligations within the stipulated time and contended that the time during which traffic was suspended by reason of Chilean occupation should be deducted. On January 11, 1890, the difficulties were settled when the line was handed over to the foreign bondholders in compliance with the contract for the cancellation of the foreign debt.

On November 28, 1890, the Peruvian Corporation (Ltd.) notified the Government of the creation in London of a subsidiary company, called the Central Railway of Peru (Ltd.), which took over all obligations connected with the line. One of the company's first steps was to reconstruct the Rio Verrugas bridge so as to reopen the section damaged in floods. This was done on January 3, 1891.

Following this, construction was commenced on the section to Casapalca, which was finished July 12, 1892, while the remainder to La Oroya was finished January 21, 1893. This line is subject to the 1907 contract between the Peruvian Corporation and the Government, one of the clauses of which extended the lease for a period of 17 years, in exchange for which the corporation was to pay 50 per cent of the net receipts during the extra time.

The Huancayo extension included in the 1907 contract was begun in 1905 and opened to traffic in September, 1908. A branch from Ticlio to Morococha, a distance of 9 miles, was constructed in 1902. A branch between Lima and Ancon, originally constructed as far as Huacho, was built by Meiggs and opened to traffic in 1870. The section between Ancon and Huacho was destroyed by the Chilean Army.

In 1920–21 a cut-off was built by the Cerro de Pasco Copper Corporation from Pachachaca, on the main line, to Morococha. This afforded a more direct route to the Oroya smelter than was offered via the Ticlio-Morococha branch. This line, which is 10 miles in length, was turned over to the Peruvian Corporation for operation.

The Oroya route has been extended as far as La Mejoride, and will be continued to Avancay and Cuzco, where it will unite with the line connecting Cuzco with Puno. This line is to be extended to the Desaguadero River on the boundary between Peru and Bolivia, where it will join the Guaqui and La Paz Railway, forming part of the proposed Pan American Railway.

This railway as it now stands is not only one of the most important lines in Peru but also one of the most remarkable railways in the world, not only because of the altitude attained at its highest point (16,000 feet above sea level) but as a feat of engineering unequaled in railway construction. The road has in operation the Galera tunnel cut through the Continental Divide. This tunnel is 3,500 feet long and the highest in the world.

The mountains are crossed by means of a series of 16 switchbanks, no rack or cog rail being used. On some of the trains engines are attached to both front and rear in order to save time on the switches.

At the present time the road is owned by the Peruvian Government and operated by the Peruvian Corporation (Ltd.), in accordance with the agreements of 1890 and 1907. In 1973 the line is to revert to the National Government gratuitously. From February 16 to May 12, 1925, traffic on the road was interrupted by reason of floods. The road at the present time has 258 miles of track in operation, made up as follows:

	Miles
Callao-Oroya	138
Lima-Ancon	24
Ticlio-Morococha	8
Oroya-Huancayo	78
Pachachaca-Morococha	10
Total	258

OPERATING OFFICIALS

The operating officials of the road on June 30, 1924, were as follows (the address in each case being Estación de Desamparados, Lima, Peru):

General manager, M. Y. Grant.
Chief engineer, F. F. Hixon.
Auditor, Jorge French.
Purchasing agent, Charles E. Blow.
Traffic superintendent, C. W. Morkill.

FINANCES

The finances of the road are indicated by the following table:

Items	1911-12	1913-14	1919-20	1920-21	1921-22	1922-23	1923-24	1924-25
Gross receipts	£455, 128	£507, 809	£963, 288	£928, 179	£760, 268	£765, 860	£839, 565	£739, 527
Working expenses	254, 806	320, 031	669, 202	678, 264	515, 127	565, 604	565, 981	651, 262
Net receipts	200, 322	187, 778	294, 086	249, 915	245, 141	200, 256	273, 584	88, 264

TRAFFIC STATISTICS

The following table indicates the freight and passenger traffic during the years mentioned:

Items	1911-12	1913-14	1919-20	1920-21	1921-22	1922-23	1923-24	1924-25
Number of passengers carried	1, 807, 060	2, 407, 867	3, 292, 754	3, 626, 039	3, 238, 492	3, 163, 096	3, 183, 241	3, 548, 645
Tons of freight carried	340, 720	408, 556	675, 116	602, 492	604, 281	675, 073	839, 560	635, 431

RIGHT OF WAY

Altitude.—The road runs from the coast to an altitude of 15,665 feet in a distance of 106 miles. This is an average incline of 148 feet per mile. On the branch from Ticlio to the mines at Morococha an altitude of 15,865 feet is reached. This is the highest point reached by any railway in the world.

Between Chosica and Matucana the train climbs 5,000 feet within a distance of 30 miles. Oroya is approximately 12,000 feet and Huancayo 10,000 feet above sea level. A list of stations, with their locations and altitudes, is given in the following table:

Stations	Location	Altitude
CALLAO-HUANCAYO SECTION	*Kilometers*	*Meters*
Pachacayo	262. 5	3, 533. 3
Llocllapampa	274. 4	3, 464. 9
Tambo	299. 0	3, 359. 0
Jauja	301. 2	3, 388. 2
Huanoli	308. 2	3, 329. 0
Natahuasi	320. 5	3, 265. 5
Concepcion	324. 5	3, 251. 3
San Jeronimo	330. 6	3, 246. 0
Huancayo	346. 0	3, 261. 2
MOROCOCHA-TICLIO SECTION		
Ticlio	171. 1	4, 752. 0
Anticona	173. 2	4, 788. 83
Morococha	185. 4	4, 537. 80
ANCON-LIMA SECTION		
Ancon	0	20. 0
Puente Piedra	16. 5	202. 8
Infantas	25. 0	120. 8
Reparticion	29. 3	89. 0
La Palma	37. 8	150. 0
Callao	0	3, 5
ANCON-LIMA SECTION—con.	*Kilometers*	*Meters*
Banos	0. 6	3. 4
Guadalupe	1. 3	3. 4
Monserrate	12. 7	138. 1
La Palma	13. 6	150. 0
Desamparados	14. 0	153. 0
Viterbo	14. 4	157. 5
Vitarte	26. 5	353. 0
Santa Clara	29. 6	403. 6
Chosica	54. 0	859. 2
San Bartolome	76. 0	1, 513. 0
Surco	91. 0	2, 039. 5
Matucana	102. 9	2, 390. 0
Tamboraque	120. 3	3, 008. 8
San Mateo	126. 3	3, 216. 0
Rio Blanco	134. 5	3, 505. 8
Chicla	140. 9	3, 734. 2
Casapalca	153. 4	4, 155. 0
Ticlio	171. 1	4, 752. 0
Galera	172. 1	4, 781. 0
Yauli	193. 6	4, 141. 6
Mahr	197. 8	4, 012. 6
Pachachaca	203. 8	3, 974. 0
Oroya	222. 0	3, 726. 2
Huari	242. 5	3, 607. 0

Gauge.—The gauge of the road is 4 feet 8½ inches throughout.

Grades.—The maximum grades on the various sections are as follows:

Callao to Lima, 1.4 per cent.
Martinete to Chaclacayo, 2.1 per cent.
Chaclacayo to San Pedro Mama, 2.4 per cent.
San Pedro Mama to Urubamba, 4 per cent.
Urubamba to San Mateo, 4 per cent.
San Mateo to Rio Blanco, 4 per cent.
Rio Blanco to Casapalca, 4 per cent.

From Casapalca the line continues on the same gradient always until it reaches the summit of the mountain at Galera, altitude 4,781 meters, whence it begins to descend on a 3 per cent gradient, which gradually diminishes at the same time that the radius of the curves increases, running parallel to the course of the Viscas River, until it reaches Yauli, where by the cut-off it continues to Oroya.

Curves.—The radius of the maximum curve on the road is 300 meters.

Ballast.—Sand and clay are used as ballast. Some gravel is used in certain sections, particularly from Callao to Lima.

Ties.—Ties made of California redwood, Colombian nonato, and Chilean roble pellin are used. The ties are 6 inches by 8 inches by 8 feet. Screwed bolts instead of spikes hold the rails to the ties on heavy grades.

Rails.—Rails weighing 70 pounds to the yard are used.

Safety switches.—Safety switches are installed at intervals of 7 to 8 kilometers. They are so arranged that they are always open, and if a train approaches out of control it runs out on this switch and is forcibly stopped. As arranged, these switches are on a counterweight; the train has to come to a full stop, and a trainman descends to the ground, opens the switch, and holds it open until the whole train has gone by. There are also 16 switchbacks on the line.

Water.—Water is secured from streams along the right of way.

Fuel.—Oil obtained from wells in the Talara region of Peru is used as fuel. At the present time there are no plans for electrification of the line.

Signaling equipment.—A block signaling system is used on the Lima-Callao division, but none on the rest of the line. From Lima on, trains run on telegraph orders from station to station.

Maintenance.—The entire line is kept in excellent repair so as to accommodate the heavy traffic it was designed to carry.

Bridges.—There are 67 bridges of steel construction, the largest 575 feet in length spanning the Verrugas ravine at a height of nearly 300 feet above its greatest depth. The central span, 235 feet in length, rests on two vertical towers each 175 feet in height. Other bridges of importance are the Purguay, Corona, Negra Quebrada, Tambo de Visco, and Chaupichaca. The last rests on two steel columns.

Tunnels.—The largest of the 65 tunnels is the Galera, 3,857 feet long. Another of importance is the Cuesta Blanca, near the Verrugas Bridge.

MOTIVE POWER AND ROLLING STOCK

On June 30, 1925, the road had 59 locomotives of different types. All locomotives are oil burning, varying from small shunting locomotives to heavy mountain Mikado types. A 150-ton locomotive is the heaviest that can be used because of the degree of curvature and steepness of the line. The various locomotives are listed below:

Name of maker	Number of engines	Wheel arrangement	Weight, including tender	Size of cylinder
			Kilos	*Inches*
Rogers Locomotive Works	1	OO	19,920	10 by 18.
Baldwin Locomotive Works	1	OO	22,000	10 by 16.
Beyer-Peacock Co	5	OO	22,640	13 by 21.
Rogers Locomotive Works	1	OOoo	22,723	8 by 14.
Do	1	OOoo	30,070	12 by 18.
Do	5	oOOO	89,294	18 by 24.
Baldwin Locomotive Works	4	oOOO	89,294	18 by 24.
American Locomotive Co	3	ooOOO	63,635	19 by 26.
North British Locomotive Co	6	oOOOo	64,000	18 by 24.
Rogers Locomotive Works	12	oOOOO	104,620	20 by 28.
North British Locomotive Co	11	oOOOO	105,194	19¾ by 24.
Do	3	oOOOO	110,745	Do.
American Locomotive Co	6	oOOOOo	122,640	20 by 28.

The character of the passenger coaches is indicated in the following table:

Maker	Number of cars	Type	Height of coupler (center of coupler to rail)	Seating capacity
			Ft. In.	
American Car & Foundry Co	7	First class	2 9	66.
Do	1	First class, with buffet	2 9	58.
Gilbert, Bush (Troy)	15	First class	2 9	12 of 56. 3 of 52.
American Car & Foundry Co	1	Mixed chair and first class	2 9	48.
Do	1	Chair car	2 9	28.
Gloucester Railway Carriage & Wagon Co.	2	First class, with buffet	2 9	58.
Central Railway	1	Second class	2 9	120.
Gilbert, Bush	15	do	2 9	96.
Gloucester Railway Carriage & Wagon Co.	2	do	2 9	96.
Central Railway	4	do	2 8	146.
Gilbert, Bush	6	Mixed first and second	2 9	28 first. 32 second.
Gloucester Railway, etc	2	do	2 9	36 first. 39 second.
Gilbert, Bush	1	First class and baggage	2 9	24 seats.
Do	2	Baggage; first and second class	2 9	20 first. 27 second.
Do	5	Baggage and second class	2 9	32.
Do	1	do	2 9	32.
Do	2	Baggage and postal van	2 9	
Do	2	Baggage car	2 9	
Gloucester Railway	2	Baggage and postal van	2 9	
Do	1	Funeral car		

No Pullman service is required or given on this line, but there are four combination sleeping and parlor cars for the use of road officials, honored visitors, etc. (the number of beds being 6, 8, 8, and 3, respectively).

The freight cars of the railway are listed below:

Flat cars, link-and-pin coupler, 2 feet 9 inches from rail:
- 11 cars of 20 tons capacity.
- 15 cars of 15 tons capacity.
- 8 cars of 12 tons capacity.

Flat car, M. C. B. coupler, 2 feet 9 inches from rail: 42 cars of 30 tons capacity.

Back flat car, M. C. B. coupler, 2 feet 9 inches from rail: 10 cars of 25 tons capacity.

Flat cars, M. C. B. coupler, 2 feet 9 inches from rail: 48 cars of 35 tons capacity; makers, American Car & Foundry Co.; bought from Ferrocarril del Sur.

Milk cars, M. C. B. coupler, 2 feet 9 inches from rail:
- 1 car of 25 tons capacity.
- 1 car of 20 tons capacity.

Gondola cars, link-and-pin coupler, 2 feet 9 inches from rail:
- 1 of 12 tons capacity.
- 2 of 15 tons capacity.
- 10 of 20 tons capacity.

Back-hopper cars, M. C. B. coupler, 2 feet 9 inches from rail, built by Metropolitan Co.:
- 28 cars of 25 tons capacity.
- 2 cars of 30 tons capacity.

Hopper-bottom dump cars, M. C. B. coupler, 2 feet 9 inches from rail: 40 cars of 35 tons capacity, built by American Car & Foundry Co.

General service car, M. C. B. coupler, 2 feet 9 inches from rail: 30 cars of 30 tons capacity, built by American Car & Foundry Co.

Box cars, M. C. B. coupler, 2 feet 9 inches from rail:
- 39 cars of 30 tons capacity.
- 4 cars of 25 tons capacity.
- 3 cars of 20 tons capacity.

Box cars, M. C. B. coupler, 2 feet 9 inches from rail: 33 cars of 30 tons capacity.

Box cars, link-and-pin coupler, 2 feet 9 inches from rail:
- 8 cars of 30 tons capacity.
- 10 cars of 15 tons capacity.
- 2 cars of 20 tons capacity.
- 7 cars of 12 tons capacity.

Stock and coke cars, M. C. B. coupler, 2 feet 9 inches from rail: 56 cars of 30 tons capacity.

Special coke cars, M. C. B. coupler, 2 feet 9 inches from rail: 7 cars of 30 tons capacity.

Special coke cars, M. C. B. coupler, 2 feet 9 inches from rail: 41 cars of 25 tons capacity, built by Metropolitan Co., rebuilt as coke cars in 1911.

Mineral cars, M. C. B. coupler, 2 feet 9 inches from rail: 15 cars of 25 tons capacity, built by Metropolitan Co., rebuilt as ore cars in 1912.

Mineral cars (eight side doors), M. C. B. coupler, 2 feet 9 inches from rail: 10 cars of 25 tons capacity, built by Metropolitan Co., 1908, rebuilt as ore cars in 1916.

Single-deck stock cars, link-and-pin coupler, 2 feet 9 inches from rail:
- 3 cars of 20 tons capacity.
- 2 cars of 12 tons capacity.

Stock cars, double-deck, link-and-pin coupler, 2 feet 9 inches from rail: 2 cars of 12 tons capacity.

Stock cars, double-deck, M. C. B. coupler, 2 feet 9 inches from rail:
- 7 cars of 30 tons capacity.
- 8 cars of 30 tons capacity (double-deck convertible).

Convertible stock cars, double-deck, without end doors, M. C. B. coupler, 2 feet 9 inches from rail: 1 car of 30 tons capacity.

- Oil tank cars, M. C. B. coupler, 2 feet 9 inches from rail:
  - 1 car of 22,072 kilos capacity.
  - 1 car of 17,495 kilos capacity.
  - 1 car of 16,700 kilos capacity.
  - 1 car of 15,457 kilos capacity.
  - 1 car of 16,200 kilos capacity.
  - 1 car of 14,900 kilos capacity.
  - 1 car of 14,630 kilos capacity.
  - 1 car of 18,480 kilos capacity.
  - 1 car of 18,500 kilos capacity.
- Oil tank cars, M. C. B. coupler, 2 feet 9 inches from rail:
  - 1 car of 25,950 kilos capacity.
  - 1 car of 23,640 kilos capacity.
  - 6 cars of 23,800 kilos capacity.
  - 2 cars of 25,000 kilos capacity.
  - 2 cars of 11,070 kilos capacity, fitted with Pond pump.
- Water tank cars, link-and-pin coupler, 2 feet 9 inches from rail:
  - 1 car of 15,000 kilos capacity.
  - 1 car of 9,650 kilos capacity.
- Water tank cars, M. C. B. coupler, 2 feet 9 inches from rail: 4 cars of 26,742 kilos capacity.
- Water tank cars, M. C. B. coupler, 2 feet 9 inches from rail (platforms are the property of the Central Railway; tanks are the property of the Cerro de Pasco Co.):
  - 1 car of 21,270 kilos capacity.
  - 1 car of 20,720 kilos capacity.
- Oil tank cars, M. C. B. coupler, 2 feet 9 inches from rail (platforms property of Central Railway; tanks property of Cerro de Pasco):
  - 1 car of 18,370 kilos capacity.
  - 2 cars of 18,250 kilos capacity.
  - 1 car of 18,600 kilos capacity.
  - 2 cars of 18,550 kilos capacity.
  - 3 cars of 25,000 kilos capacity.
  - 1 car of 18,540 kilos capacity.
  - 1 car of 18,280 kilos capacity.
  - 3 cars of 18,450 kilos capacity.
  - 1 car of 18,400 kilos capacity.
  - 1 car of 18,375 kilos capacity.
  - 1 car of 18,500 kilos capacity.
  - 1 car of 18,350 kilos capacity.
  - 1 car of 18,650 kilos capacity.

Miscellaneous cars owned by the line are mentioned in the following table:

Types of cars	Maker	Wheels		Coupler		Capacity
		Base	Diameter	Type	Height	
		Ft. In.	*Ft. In.*		*Ft. In.*	
Pay car, "Inca"	Central Railway				2 9	
Motor car, 45 brake horsepower, 6 cylinders, "Buda."	Drewry Motor Car Co., London.	8 3½	2 0			6 persons.
Workmen's car	Gilbert Bush, Troy			Drawhead link and pin.	2 9	68 seating.
Do	do			do	2 9	80 seating (2 cars).
Workmen's sleeping car	do			do	2 9	12 beds.
Tool car				Link and pin	2 9	12 tons.
Wrecking car		25 0	2 9			2 tons.
Steam shovel	Whitaker Bros	9 0	2 6			10 tons.
Steam crane	Stothert & Pitt	6 6	2 6			Do.
Do	Bedford Engine Co	7 0	2 2			5 tons.

REPAIR SHOPS

The repair shops are located at Callao. These shops comprise a machine shop, erecting shop, blacksmith shop, boiler shop, injector shop, coppersmith shop, power house, carpenter shop, foundry, paint shop, shed for erecting and repairing coaches, and a roundhouse. besides various material stores. These shops are equipped with both old and up-to-date machinery, yards, cranes, etc., including an electric-welding plant, a machine for welding new ends on boiler tubes, etc. The shop handles all repairs to locomotives and rolling stock, and rebuilds and constructs freight cars. In the locomotive shops new construction and repair work is carried on for the various departments of the railway, particularly the engineer's department, which frequently requires the shop to make various rail and track appliances for it. The shops make an average of 3,500 brake shoes a month to replace the number worn out on the line. Mechanics, turners, fitters, erectors, coppersmiths, electricians, boilermakers, blacksmiths, molders, running shedmen, carpenters, painters, bricklayers, car and coach builders and repairers, and ordinary laborers are employed in these shops.

SOUTHERN RAILWAY OF PERU

SURVEY OF DEVELOPMENT

The first survey for the Southern Railway was made in 1856. In accordance with a special law passed on October 9, 1860, authorizing the Executive to make a contract for the construction of a railway from Islay (a little to the north of Mollendo) to Arequipa, tenders were called for on February 26, 1862.

A concession was granted to Don Juan Barrios on January 29, 1863, but was allowed to lapse. A second contract, made with P. Gibson and Joseph Pickering, also fell through on December 10, 1864.

For political reasons, one of the termini of the road was changed when the Government authorized the formation of a limited company for the construction of a railway from Mollendo to Arequipa on July 12, 1867. Henry Meiggs, who was then building the Central Railway, offered to construct the line. His proposals were agreed to on April 20, 1868; the cost of the line was not to exceed 12,000,000 soles, and construction was to be finished in three years.

The line was leased to Meiggs for five years on December 5, 1870, just before it was opened for traffic (on December 24, 1870). The Government at this time furnished 250,000 soles toward the purchase of rolling stock. On June 1, 1871, it was decided that the rent for the road would be 360,000 soles annually for the first two years and 480,000 soles for the remaining three years that the lease was still to run.

On January 15, 1868, a law was passed authorizing the Executive to issue contracts for the construction of suitable branches, among which was the line to Cuzco. The Government was to pay for their construction in bonds bearing 6 per cent interest and 2 per cent amortization, commencing 10 years after the roads were constructed, which bonds the contractors were to accept at their nominal value.

Meiggs, who was building the first section of the line, was asked to undertake a survey of the proposed branch. Consequently, on January 19, 1869, a survey was begun. The branch was completed and opened to traffic on April 26, 1876. It started from Juliaca, on the one hundred and eighty-seventh mile of the line from Arequipa to Puno, and was constructed as far as Santa Rosa. Meiggs died in 1877 before extending the line farther.

The war with Chile (1879–1883) stopped construction until August 7, 1886, when a new contract was arranged with the Government for the extension of the line from Santa Rosa to Sicuani and for the lease of the Southern Railway. This contract was rejected by Congress, which on October 25, 1887, declared that the Southern Railway ceased to be leased, and left the occupants in possession only until an inventory could be made. The reason given was that the obligations had not been met. On May 1, 1888, an administrator was named by the Government.

Under clause 2 of the decree of January 11, 1890, the Southern Railway was turned over to the foreign debenture holders and by them to the Peruvian Corporation (Ltd.), on a 66-year lease, its value being estimated at 25,822,906 soles.

The law of January 30, 1904, stipulated that the railroad be continued as far as Checacupe, a distance of 26 miles. The Peruvian Corporation (Ltd.) was intrusted with its construction on March 17, 1905. On September 19, 1906, the Peruvian Corporation was authorized to operate the road on payment of £73,000. Traffic was officially opened on January 1, 1907. The line was completed to Cuzco in 1908.

The road has in operation at the present time 602 miles of track, made up as follows: Mollendo to Puno, 325 miles; Juliaca to Cuzco, 210 miles; sidings, etc., 34 miles.

In addition the road has a total of 33 miles of switches and branch lines in operation. From January 29 to March 7, 1925, traffic on the road was interrupted by reason of floods.

STEAMSHIP CONNECTIONS

In connection with the railway line the Peruvian Corporation operates a line of steamers from Puno across Lake Titicaca to Guaqui on the Bolivian side, a distance of 128 miles, where connection is made with the Guaqui-to-La Paz Railway, owned since 1910 by the Peruvian Corporation. This road, 63 miles in length, is discussed further in the chapter on Bolivia. Three ships make up the fleet—(1) the steamer *Inca*, of about 1,500 tons displacement, a vessel of the best modern construction, with two triple expansion engines, ventilator system using superheated steam, and a speed of 15 knots per hour; (2) the steamer *Coya*, of about 1,000 tons displacement, with compound engines and a speed of 9 knots per hour (staterooms and other sections arranged so as to obtain the greatest comfort on the trips during the cold nights); (3) the motor boat *Yavari*, of about 400 tons displacement, with petroleum engines, of 320 horsepower and a speed of 11 knots per hour. The last two boats have been remodeled and reconstructed by the Peruvian Corporation. There are, besides, three steel lighters for freight, with a total capacity of 500 tons.

For the maintenance of channels and dikes a steam dredge 120 feet long is used. At Puno there has been installed a modern dockyard by means of which the *Inca* can be taken from the water in 25 minutes; this greatly facilitates the repairs to the vessels and lighters.

FINANCES

The following tables are indicative of the road's finances for the fiscal years shown:

RAILWAY

Items	1911–12	1912–13	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Gross receipts	£354, 190	£356, 674	£496, 652	£446, 736	£330, 377	£393, 788	£418, 833	£458, 643
Working expenses	226, 676	223, 707	423, 748	364, 080	228, 454	266, 994	278, 291	309, 384
Net receipts	127, 514	132, 967	72, 904	82, 656	101, 923	126, 794	140, 542	149, 259

STEAMSHIP SERVICES ON LAKE TITICACA

Gross receipts	£63, 966	£41, 278	£29, 760	£34, 557	£36, 189	£35, 989		
Working expenses	33, 968	26, 619	19, 029	19, 794	27, 402	22, 044		
Net receipts	29, 998	14, 659	10, 731	14, 763	8, 787	13, 945		

TRAFFIC STATISTICS

The total freight carried during the year ended June 30, 1913, was 140,351 tons, and for the year ended June 30, 1925, 144,342 tons. The principal commodities carried are wheat, maize, flour, wood, sugar, minerals, general merchandise, wool, rum and alcohol, liquors, foodstuffs, and rice. During 1925 this line carried 249,458 passengers, compared with 587,818 in 1913. Figures for eight years are given below:

Items	1911–12	1912–13	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Passengers carried	622, 617	[1] 587, 818	312, 050	326, 366	215, 376	202, 691	224, 781	249, 458
Freight carried, tons	136, 734	140, 351	138, 643	131, 816	116, 424	128, 338	132, 498	144, 342

[1] Decrease due to the electrification of a tramway between Arequipa and Tringo.

Following is a statement of the number of passengers carried on the Lake Titicaca steamers: 1919–20, 11,436; 1921–22, 7,450; 1922–23, 7,224; 1923–24, 8,476; 1924–25, 10,104.

A comparison of the commodities carried during the fiscal years ended June 30, 1922 and 1923, is given below:

Commodities	1921–22		1922–23	
	Tons	Freight receipts, in soles	Tons	Freight receipts, in soles
Fruits and vegetables	2, 910	36, 360	2, 709	35, 480
Lime	3, 910	11, 130	6, 696	16, 870
Minerals	3, 527	26, 410	4, 740	27, 530
Coca	1, 136	27, 930	1, 246	36, 510
Sugar	2, 985	86, 160	3, 493	109, 020
Wheat, corn, etc	6, 947	64, 870	8, 185	82, 280
Wool	6, 286	228, 800	9, 629	372, 230
Alcohol and rum	1, 557	67, 360	1, 465	63, 260
Flour	4, 162	89, 400	5, 635	123, 220
Foodstuffs	3, 530	83, 580	3, 894	92, 820
Lumber	1, 718	52, 460	2, 628	80, 510
Wines and liquors	2, 451	69, 470	2, 293	69, 680
Animals	6, 680	70, 110	7, 288	81, 210

OPERATING OFFICIALS

The operating officials of the road for the fiscal year ended June 30, 1925, were as follows (address, in each case, Arequipa, Peru):

General manager of the railway, L. S. Blaisdell.
Accountant, G. K. Wallace.
Locomotive superintendent, N. W. O'Hagen.
Resident engineer, T. A. Corry.
Traffic superintendent, W. H. Brown.
Purchasing agent, G. Bingham.
Telegraphic address, "Impulsive," Arequipa.

PURCHASES

Materials available locally are procured through the purchasing agent, G. Bingham. Large orders are placed through the offices of the Peruvian Corporation (Ltd.), in Peru, as described in the introductory paragraph.

RIGHT OF WAY

Altitude.—The altitude of the various stations along the three divisions of the road is indicated below:

Stations	Altitude	Distance	Stations	Altitude	Distance
PUNO DIVISION			MOLLENDO DIVISION—con.		
	Feet	*Miles*		*Feet*	*Miles*
Arequipa	7,550	---------	San Jose	4,850	65
Yura	8,450	18	Ramal	5,179	72
Quiscos	10,013	30	Vitor	5,350	77
Ayrampal	11,293	37	Quishuarani	6,125	84
Pampa de Arrieros	12,302	44	Uchumayo	6,450	95
Canaguas	13,381	59	Huaico	6,548	98
Sumbay	13,542	71	Tiabaya	6,749	100
Pilones	14,357	87	Tingo	7,275	105
Vincocaya	14,357	96	Arequipa	7,550	107
Crucero Alto	14,688	117			
Lagunillas	14,280	129	CUZCO DIVISION		
Santa Lucia	13,250	148	Juliaca	12,550	---------
Maravillas	12,967	156	Laro	12,727	26
Cabanillas	12,747	169	Pucara	12,738	37
Juliaca	12,550	189	Tirapata	12,731	42
Puno	12,540	219	Ayaviri	12.807	57
Puno Mole	12,535	---------	Santa Rosa	13,100	82
			La Raya	14,153	99
MOLLENDO DIVISION			Chectuyoc	11,860	119
			Sicuani	11,650	123
Mollendo	13	---------	San Pablo	11,444	131
Mejia	10	9	Tinta	11,395	139
Ensenada	32	14	Combapata	11,372	143
Tambo	986	19	Checacupe	11,247	148
Posco	1,830	26	Quiquijana	10,555	166
Cachendo	3,250	35	Urcos	10,236	179
Huagri	3,524	44	Huambutio	10,045	190
La Joya	4,141	55	Cuzco	11,007	210

Gauge.—The gauge of the road is 4 feet 8½ inches.

Grades.—Mollendo section: Maximum grades are 4 per cent between Ensenada and Tambo, La Joya and San Jose, Vitor and Quishuarani, Quishuarani and Uchumabo, Tiabaya and Tingo, and Tingo and Arequipa.

Puno section: Maximum grade is 3.8 per cent between Arequipa and La Cantera (12 kilometers) and between Uyupampa and Quiscos.

Cuzco section: Maximum grade is 4 per cent between Araranca and La Raya, with a descent also of 4 per cent between La Raya and Maragani.

Curves.—The radius of the maximum curve on the road is 328 feet.

Ballast.—Ballast used on the road is of hard sand.

Ties.—California redwood ties, 6 feet by 8 by 8 inches, spaced 1,700 to the kilometer, are used on the road. Some ties of Colombian nato are also used.

Rails.—The rails average from 60 to 80 pounds to the yard.

Water.—Water is plentiful and secured from rivers along the right of way. The standard type of water tank is in use.

Fuel.—Both coal (briquets and Australian coal) and petroleum are used as fuel, although it is intended to dispense with coal entirely as soon as possible. Recently several large storage tanks and a pipe line for discharging petroleum have been installed at Mollendo by the London & Pacific Petroleum Co., which will facilitate this change.

Signaling equipment.—No signaling equipment is used.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate the traffic they are required to carry.

Bridges.—The following bridges are located along the right of way:

- Between Mollendo and Arequipa—Tingo Grande Bridge, between kilometers 165 and 166, 100 feet long.
- Between Arequipa and Puno—
  - Del Desvio Bridge, between kilometers 2 and 3, 158 feet long.
  - Sumbay Bridge, between kilometers 116 and 117, 230 feet long.
  - Imata Bridge, between kilometers 164 and 165, 221 feet long.
  - Colca Bridge, between kilometers 180 and 181, 67 feet long.
  - Chocorosi Bridge, between kilometers 253 and 254, 73 feet long.
  - Ilpa Bridge, between kilometers 327 and 328, 102 feet long.
- Between Juliaca and Cuzco—
  - Maravillas Bridge, between kilometers 6 and 7, 600 feet long.
  - Calapuja Bridge, between kilometers 22 and 23, 600 feet long.
  - Tirapata Bridge, between kilometers 67 and 68, 180 feet long.
  - Malleri Bridge, between kilometers 79 and 80, 180 feet long.
  - Unnamed bridge, between kilometers 78 and 79, 42 feet long.
  - Cahuasiri Bridge, between kilometers 93 and 94, 180 feet long.
  - La Union Bridge, between kilometers 101 and 102, 180 feet long.
  - Achacu Bridge, between kilometers 128 and 129, 260 feet long.
  - Pulpura Bridge, between kilometers 145 and 146, 104 feet long.
  - Sicuani Bridge, between kilometers 194 and 195, 600 feet long.
  - San Pablo Bridge, between kilometers 215 and 216, 120 feet long.
  - Huambutio Bridge, between kilometers 306 and 307, 50 feet long.
  - Huatanay Bridge, between kilometers 333 and 334, 100 feet long.

There are also in the section various small bridges which have up to 22½ feet clear length.

Tunnels.—The road has one tunnel, 339 feet in length, located between Arequipa and Puno.

MOTIVE POWER AND ROLLING STOCK

The road had the following locomotives (43 in number) in operation for the fiscal year ended June 30, 1923:

No. of locomotive	Manufacturer	Date of construction	Dimensions of cylinders	Pressure of boilers, in pounds	Wheels		Capacity of tender		
					Number of couplers	Diameter	Coal	Petroleum	Water
			Inches			*Inches*	*Kilos*	*Kilos*	*Kilos*
1	Rogers	1871	18 by 26	140	6	52	6,000		7,600
3	do	1871	18 by 26	140	6	52	6,000		7,600
6	do	1871	18 by 30	140	6	52	6,000		7,600
23	Baldwin	1871	12 by 20	150	4	42	500		3,000
24	do	1871	12 by 20	150	4	42	500		3,000
34	Rogers A. L. Co	1906	18 by 24	150	6	48	5,000		14,000
37	Rogers	1871	18 by 26	140	6	52	6,000		7,600
46	Black Hawtern	1887	14 by 20	150	6	42	1,000		3,000
47	Rogers A. L. Co	1906	16 by 24	160	6	44	1,000		3,800
48	do	1906	16 by 24	160	6	44	1,000		3,800
49	do	1906	16 by 24	160	6	44	1,000		3,800
50	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
51	do	1906	20 and 31 by 28	180	8	52	7,000		11,400
52	do	1906	20 and 31 by 28	180	8	52	7,000		11,400
53	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
54	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
55	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
56	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
57	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
58	do	1906	20 and 31 by 28	180	8	52		5,900	11,400
59	do	1906	20 and 31 by 28	180	8	52	7,000		11,400

No. of locomotive	Manufacturer	Date of construction	Dimensions of cylinders	Pressure of boilers, in pounds	Wheels		Capacity of tender		
					Number of couplers	Diameter	Coal	Petroleum	Water
			Inches			*Inches*	*Kilos*	*Kilos*	*Kilos*
60	Baldwin	1906	21 and 31 by 26	180	8	52		5, 900	9, 500
61	do.	1906	21 and 31 by 26	180	8	52	7, 000		9, 500
65	Rogers A. L. Co	1906	20 by 28	180	8	52		5, 900	11, 400
66	do.	1906	20 by 28	180	8	52		5, 900	11, 400
68	do.	1906	20 by 28	180	8	52		5, 900	11, 400
69	do.	1906	20 by 28	180	8	52		5, 900	11, 400
71	do.	1906	20 by 28	180	8	52	7, 000		11, 400
72	do.	1906	20 by 28	180	8	52		5, 900	11, 400
76	do.	1906	20 by 28	180	8	52	7, 000		11, 400
77	do.	1906	20 by 28	180	8	52		5, 900	11, 400
78	do.	1906	20 by 28	180	8	52		5, 900	11, 400
79	do.	1906	20 by 28	180	8	52	7, 000		11, 400
83	do.	1907	19 by 26	180	6	58		6, 550	11, 400
84	do.	1907	19 by 26	200	6	58	7, 000		11, 400
85	do.	1907	19 by 26	180	6	58		6, 550	11, 400
86	do.	1907	19 by 26	180	6	58		6, 550	11, 400
87	do.	1907	19 by 26	180	6	58		6, 550	11, 400
88	do.	1907	19 by 26	180	6	58		6, 550	11, 400
91	Schenectady A. L.	1914	16½ by 26	180	8	52	5, 000		7, 572
92	do.	1914	16½ by 26	180	8	52		5, 934	7, 572
93	do.	1914	16½ by 26	180	8	52		5, 934	7, 572
94	do.	1914	16½ by 26	170	8	52		5, 934	7, 572

No. of locomotive	Class of brakes			Weight, in kilos			Traction power, in pounds, at 85 per cent
				Locomotive	Tender	Total	
1	Air		Hand	47, 200	29, 000	76, 200	19, 278
3	do		do	47, 200	29, 000	76, 200	19, 278
6	do		do	45, 000	29, 000	74, 000	22, 244
23		Steam	do	24, 500		24, 500	8, 700
24		do	do	24, 500		24, 500	8, 700
34		do	do	49, 060	40, 234	89, 294	20, 655
37		do	do	46, 000	29, 000	75, 000	19, 278
46		do	do	23, 570		23, 570	11, 900
47		do	do	39, 545		39, 545	18, 990
48		do	do	39, 545		39, 545	18, 990
49		do	do	39, 545		39, 545	18, 990
50	Air		do	69, 300	34, 965	104, 265	24, 615
51	do		do	69, 180	32, 525	101, 705	24, 615
52	do		do	69, 180	32, 525	101, 705	24, 615
53	do		do	69, 300	34, 965	104, 265	24, 615
54	do		do	69, 300	34, 965	104, 265	24, 615
55	do		do	69, 300	34, 965	104, 265	24, 615
56	do		do	69, 300	34, 965	104, 265	24, 615
57	do		do	69, 300	34, 965	104, 265	24, 615
58	do		do	69. 300	34, 965	104, 265	24, 615
59	do		do	69, 180	32, 525	101, 705	24, 615
60	do		do	65, 740	33, 465	99, 205	23, 814
61	do		do	65, 620	30, 625	96, 245	23, 814
65	do		do	67, 483	34, 965	102, 448	32, 953
66	do		do	67, 483	34, 965	102, 448	32, 953
68	do		do	67. 483	34, 965	102, 448	32, 953
69	do		do	67, 483	34, 965	102, 448	32, 953
71	do		do	66, 363	32, 637	99, 000	32, 953
72	do		do	67, 483	34, 965	102, 448	32, 953
76	do		do	66, 363	32, 637	99, 000	32, 953
77	do		do	67, 483	34, 965	102, 448	32, 953
78	do		do	67, 483	34, 956	102, 448	32, 953
79	do		do	66, 363	32, 637	99, 000	32, 953
83	do		do	65, 200	41, 930	107, 130	25, 447
84	do		do	64, 090	40, 363	104, 453	27, 510
85	do		do	65, 200	41, 570	106, 770	25, 447
86	do		do	65, 200	41, 930	107, 130	25, 447
87	do		do	65, 200	41, 930	107, 130	25, 447
88	do		do	65, 200	41, 930	107, 130	25, 447
91	do		do	52, 272	27, 454	79, 726	20, 827
92	do		do	52, 392	29, 782	82, 174	20, 827
93	do		do	52, 392	29, 782	82, 174	20, 827
94	do		do	52, 392	29, 782	82, 174	19, 670

The cars are listed below:

- Freight cars:
  - Box cars—
    - 61, capacity 25 tons each.
    - 44, capacity 44 tons each.
    - 3, capacity 16 tons each.
    - 2, capacity 30 tons each.
  - American-type box cars—
    - 32, of 20 tons each.
    - 8, of 25 tons each.
  - New box cars, 34, of 30 tons each.
  - Wood platform cars—
    - 79, of 20 tons each.
    - 4, of 25 tons each.
  - New wood platform cars, 27, of 30 tons each.
  - Gondolas—
    - 15, of 20 tons each.
    - 4, of 25 tons each.
  - New gondolas, 11, of 30 tons each.
  - Stock car, 1, of 25 tons.
  - New stock cars, 46, of 30 tons each.
  - New double-deck stock cars, 3, of 30 tons each.
  - Petroleum tank cars, 6, of 22 tons each.
- Passenger coaches:
  - Sleeping cars—
    - 2 old cars, with five beds each.
    - 1 new car, with two beds.
    - 1 new car, with four beds.
  - First-class passenger coaches—
    - 8 new cars, capacity 58 passengers each.
    - 3 old cars, capacity 30 passengers each.
    - 2 old cars, capacity 56 passengers each.
    - 1 old car, capacity 40 passengers.
  - Second-class passenger coaches—
    - 7 new cars, capacity 100 passengers each.
    - 4 old cars, capacity 100 passengers each.
  - Mixed coaches—
    - 1, capacity 9 chair passengers and 34 first-class passengers, or a total of 43.
    - 2, capacity (each) 28 first-class passengers and 60 second-class passengers, or a total of 88.
  - Parlor cars, 2, capacity (each) 20 passengers.
- Baggage cars:
  - 3 old cars, capacity 20 tons each.
  - 7 new cars, capacity 20 tons each.
- Miscellaneous rolling stock:
  - 6 trolley cars, capacity 10 tons each.
  - 1 crane car, capacity 11,400 kilos.
  - 3 garbage cars, capacity 12 tons each.
  - 1 tool car, capacity 10 tons.

REPAIR SHOPS

The repair shops are located at Arequipa, where approximately 220 operatives are employed. The power used is entirely electrical. Besides repairs to the rolling stock of the Peruvian Railway and Navigation system, all kinds of articles are manufactured. All the rolling stock of the system, passenger as well as freight, is repaired in these shops. During the last nine years 29 new passenger coaches and 88 new freight cars have been constructed. Pieces weighing up to 5 tons are cast.

TRUJILLO RAILWAY

SURVEY OF DEVELOPMENT

On August 26, 1869, the proposal of Don Jose G. Garcia to construct a railway from the port of Malabrigo to Paijan, Chocope, and Ascope was accepted. He was granted a 99-year concession, at the end of which the line was to revert to the Government. He transferred his rights to the Trujillo Railway on March 1, 1871.

A contract for the construction of a short line from Salaverry to Trujillo had been conceded to Don Juan M. Ugarte on April 27, 1870, but was rescinded on October 13, 1870.

On January 11, 1872, the Government decided to construct on its own account the railway from Salaverry to Trujillo, Paijan, and Ascope, a branch from Trujillo to Pedregal, and a mole in Trujillo. The former Trujillo Railway Co. was paid 90,736 soles as compensation and cost of studies—this settling its claims. On January 17, 1872, tenders were called for on the line, mole, and two branches to Pedregal and to Ascope.

After repeated calls for tenders the single offer of Don Pedro T. Larranaga, on June 3, 1872, was accepted. It included the construction of the railway, its two branches, and the mole for 3,400,000 soles, which included the 96,736 soles to be paid over to the former company. Bonds were issued to cover this construction.

There was a great deal of delay in the construction, but on December 28, 1876, the railway was opened to traffic between Chocope and Ascope, including the long 1,969-foot bridge of 26 spans over the Rio Chicama and the bridge over the Rio Moche.

In 1879 the Paijan branch was all but completed, only 4 miles being necessary to finish it, when the war with Chile broke out.

At this time began the difficulties from which the railway was not to recover. On July 13, 1883, Larranaga mortgaged it to Grace Bros., to whom the line was indebted, but on January 17, 1884, the government of General Iglesias, who took over the line administratively, declared this transaction null and void on the ground that Larranaga had no right to mortgage property which was not his. It was suspended on January 23, 1884, and canceled on April 21, 1884, for various reasons, the principal one being the suspension of construction work for the last seven years.

The Government paid Grace Bros. 50,000 soles which were due and granted them various other favors, and on February 5, 1885 (under decree of June 24, 1884), gave over the railway to a new lessee and contractor, Edouard C. Dubois, on condition that he restore the line and complete its construction. Butt, Taylor & Co. were the railway's bondholders, and Tomas Miguel de Cardenas represented their rights, while Pierre Combe acted similarly in his own name.

The situation became so involved that a law was passed on October 25, 1887, enjoining the Government to reassume its rights in the Trujillo Railway in order that it might lease the road after a public call for tenders. The lessee was to undertake the service of the bonds of 1875. A commission was named on December 6, 1887, to examine the line.

The administrator named by the Government was obliged to call out military aid to expel the manager acting on behalf of Dubois and Larranaga.

In 1888 the representatives of the bondholders—Pierre Combe, Calderon, acting for Butt, Taylor & Co., and Grace Bros. & Co.—asked for payment of interest and amortization on the 1875 bonds they were holding. The administrator was ordered to transfer out of the net profits to the Callao Bank the service of the bonds they were holding, respectively, 260,000 soles, 300,000 soles, and 60,000 soles' worth. The French minister acted on behalf of the French debenture holders.

On January 11, 1890, the agreement with foreign bondholders for the cancellation of Peru's foreign debt gave over the Trujillo Railway to the Peruvian Corporation for 66 years, free of rent, and the corporation created a subsidiary company, called the Trujillo Railway Co., with a share capital of £500,000. This company was to operate the railroad.

The line is subject to the agreement of June 20, 1907, whereby the Peruvian Corporation retains its lines until 1973 instead of 1956, as previously stated. During the last 17 years 50 per cent of the profits is to be paid to the Government.

At the present time the road has 47 miles of main-line track in operation from Salaverry to Ascope.

The district served by the railway is one of the most highly developed of the coast, and sugar is the chief product. The earnings of the line have been adversely affected by the diversion of the sugar traffic of the extensive Casa Grande estate through the port of Malabrigo. The mountainous hinterland contains many mines rich in copper and silver, the most promising of which, in and around Quiruvilca, have been acquired by a subsidiary of the Guggenheim interest. The Peruvian Corporation has long planned an extension into the mining districts, which would pass through extensive coal fields at Huazday and would reach the silver and copper mines of Quiruvilca. An aerial tramway and motor road have been built to afford an outlet for the Quiruvilca mines, so that such a project is not likely to materialize.

From March 6 to April 28, during the fiscal year ended June 30, 1925, traffic was interrupted wholly or partly by floods.

FINANCES

The following table is indicative of the road's finances during the years noted:

Items	1912–13	1913–14	1918–19	1920–21	1921–22	1922–23	1923–24	1924–25
Gross receipts	£62, 078	£64, 896	£90, 234	£106, 868	£80, 007	£95, 976	£106, 667	£87, 975
Working expenses	35, 830	40, 389	60, 022	83, 915	58, 711	68, 911	64, 969	70, 569
Net receipts	26, 248	24, 507	30, 212	22, 953	21, 296	27, 065	41, 698	17, 406

TRAFFIC STATISTICS

The following table is indicative of the road's traffic during the years noted:

	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Passengers carried	731, 611	797, 885	791, 119	805, 807	828, 111	700, 419
Tons of freight carried	209, 708	148, 117	128, 230	145, 815	166, 971	118, 844

RIGHT OF WAY

Gauge.—The gauge of the road is 0.914 meter throughout.

Grades.—The maximum grades do not exceed 1.5 per cent.

Fuel.—The road uses crude petroleum of native production as fuel.

Rails.—Rails weighing 30 to 50 pounds to the yard are used.

Bridges.—There are two bridges on the road—one at Moche, of four spans and 302 feet in length, and the other at Chicama, of 26 spans and 1,969 feet in length.

MOTIVE POWER AND ROLLING STOCK

The rolling stock consists of 14 locomotives, 196 freight cars, and 31 passenger coaches, practically all of American manufacture.

Small repair shops are located in Salaverry.

PAITA-TO-PIURA RAILWAY

The history of the Paita-to-Piura Railway dates back to February 7, 1870, when the first survey for its construction was made by Ernest Thomas. The estimated cost was 19,280 soles. On July 7, 1871, the proposals of a man named Blume were accepted for £374,800. The contract was altered in 1874, and the Government deposited bonds for £200,000 nominal to be sold at 75 per cent. Blume was allowed to continue the construction. Work progressed very slowly, and in 1885 40 miles of track had been laid to a point a little beyond Sullana. This section of the line did not conform to the prescribed conditions, but the Government granted the contractor an additional 18 months in which to finish the railway. Upon its completion the line was to be leased to the contractor for 20 years upon an annual payment of 2½ per cent of the total receipts for the first six years and 5 per cent thereafter. In the event that the gross earnings exceeded 100,000 soles, 25 per cent of the excess was to be paid over to the Government. On April 10, 1887, the road was opened to Piura, a distance of 60 miles. The road was completed at a cost of $1,800,000. On January 11, 1890, the Peruvian Corporation (Ltd.) acquired the road. It reconstructed certain sections of the line, leveling some of the steeper grades and increasing the radius of the curves. At the present time the road is 60 miles in length, running from Paita to Piura, and is controlled by the Peruvian Corporation (Ltd.), which holds £56,522 of its £100,000 ordinary stock.

While no construction is under way at the present time, it is proposed to build a line from Paita to Catacaos in the near future. The Peruvian corporation at the present time operates, under a private agreement, a road between Piura and Catacaos. A discussion of this road will be found later on in this chapter. During the fiscal year ended June 30, 1925, the operation of the road was partly or wholly interrupted by floods between February 16 and June 22, and consequently the earnings were somewhat affected.

The finances of the road are indicated by the following table:

Items	1912–13	1913–14	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Gross receipts	£36, 502	£38, 390	£53, 337	£74, 805	£77, 134	£70, 967	£70, 926	£75, 482	£55, 447
Working expenses	21, 474	23, 502	31, 947	56, 210	54, 895	49, 086	44, 760	45, 100	39, 255
Net receipts	15, 028	14, 888	21, 390	18, 595	22, 239	21, 881	26, 166	30, 382	16, 192

The traffic of the road is indicated by the following table:

Items	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Passengers carried	169,254	202,529	230,927	176,657	174,589	195,251	123,616
Tons of freight carried	77,807	82,386	81,677	71,419	68,574	72,512	49,927

Inasmuch as the road is owned and controlled by the Peruvian Corporation, the reader interested in operating officials and method of purchases should consult the paragraph at the beginning of the chapter.

Altitude.—The following table shows the various altitudes on the road, together with location of stations:

Stations	Location (kilometers from Paita)	Altitude (meters above sea level)	Stations	Location (kilometers from Paita)	Altitude (meters above sea level)
Paita	----------	1	Sojo	46.64	----------
Arenal	21.56	----------	Sullana	62.00	76
Huaca	29.16	17	Piura	97.32	50
Viviate	33.84	----------			

Gauge.—The gauge of the road is 1.44 meters.

Grades.—The maximum grade of the road is about 2.55 per cent.

Rails.—Rails weighing 45 pounds to the yard are used.

Fuel.—Oil and algarrobo wood are used as fuel. Fuel is secured locally, and at the present time there are no plans for any change.

Bridges.—There are two bridges each 180 feet in length, located at miles 24 and 27.

For the fiscal year ended June 30, 1925, the road had 6 locomotives, 7 passenger cars, 45 freight cars, 4 tank cars, 2 baggage cars, 2 rail motor cars, 8 lighters, 1 motor tugboat, and 1 motor car.

There is one repair shop located at Paita.

PISCO-TO-ICA RAILWAY

The history of the Pisco-to-Ica Railway had its beginning January 31, 1861, when a concession for construction of the road was first authorized. It was not until March 26, 1867, however, that a definite contract was entered into with Don F. Canevero, under which 22 miles of track were laid in 1868 and 23 miles in 1869. On May 31, 1871, the railroad was completed and officially opened to the public. It extends through the plain between the Pisco and Ica Rivers, entering the Ica Valley at Guadalupe and continuing in a southeasterly direction to the capital of the Department. The road is approximately 73 miles in length. On October 21, 1871, the Government bought the railway for £90,000. On December 30, 1871, the Government called for tenders on the basis of a five-year lease at an annual rental of 60,000 soles. The lease was awarded to Don Modesto Basadre on March 6, 1872, and was extended for 10 years on January 28, 1876. Under the agreement for this extension the company undertook to complete the construction and to form a company for working the railway and developing the wine industry in this district.

In 1879, during the war with Chile, Basadre obtained a reduction of 30 per cent of the annual rental on the grounds that increased cost of coal necessitated such reduction. In 1851 the concession was transferred to Don Serdio. On April 22, 1884, the Government declared the transfer contract null and void. On September 16, 1884, the line was leased to Screittmuller for 25 years at a rental of 7,000 soles.

The law of January 11, 1890, which turned over all State railways to the bondholders, transferred to them the Government's rights and obligations respecting the Pisco-to-Ica Railway and the lease to Screittmuller was respected.

In 1897 Screittmuller was authorized to construct, at his own expense, a branch 1 mile long from the port to the mills of Miranda, this branch to be incorporated as a part of the railway. On April 6, 1900, the line was transferred to Don Manuel Nicobar and Carlos Alvarez Calderon, the present lessees. Upon expiration of their lease in 1911 the 25 per cent gross receipts paid by them to the Peruvian Corporation as rental was increased to 30 per cent in a renewed lease, but since October, 1920, the annual rental has been fixed at £8,000 per annum. The railroad, although owned by the Government, is held by the Peruvian Corporation on the basis of the 1890 agreement.

The road at the present time has 45 miles of main-line track in operation between Pisco and Ica and two short branches (approximately 1 mile of track), one to Hacienda Macacona and the other to Molino. At the present time it is not planned to construct any additional line.

The income of the road, which represents the amount received from the lessee by the Peruvian Corporation, is as follows: 1912–13, £6,071; 1913–14, £7,246; 1918–19, £9,377; 1919–20, £13,052; 1921–22, £7,349; 1922–23, £8,139; 1923–24, £8,169; 1924–25, £8,276.

The last year for which traffic information is available is the fiscal year ended June 30, 1924. During this year the road carried 34,113 tons of freight—principally cotton, grapes, brandy, and wine—and 72,223 passengers.

There are no bridges or tunnels on the road.

The motive power and rolling stock for the road for the fiscal year ended June 30, 1925, are indicated below:

- Locomotives:
  - 5 of four-wheel couplers, weighing 38,000 kilos each.
  - 2 of two-wheel couplers, weighing 7,000 kilos each.
- Rolling stock:
  - 1 first-class passenger car (capacity 26).
  - 2 mixed first and second class cars (capacity 82).
  - 2 mixed first and second class cars (capacity 80).
  - 2 mixed first and second class cars (capacity 20).
  - 2 second-class passenger cars (capacity 88).
  - 9 gondola cars, 30 feet by 8 feet 6 inches.
  - 3 livestock cars, 28 feet 6 inches.
  - 6 box cars, 8 feet 6 inches wide.

There is one repair shop on the road, located at Pisco.

LIMA-TO-LURIN RAILWAY

(OPERATED IN CONNECTION WITH CENTRAL RAILWAY)

This road was constructed by Government engineers under the supervision of the Department of Public Works, but in May, 1917, the road was handed over to the Peruvian Corporation (Ltd.), for operation after 19 miles had been constructed. The road extends 28 miles from the city of Lima to Lurin. It was completed and opened to traffic in December, 1918, and is now being operated by the Peruvian Corporation.

The following table shows the receipts and expenditures of the road during the fiscal year ended June 30, 1924:

[**"Lp."=Peruvian pound=$4.8665 at par; "s."=sole, 10 to the pound; "c."=cent, 100 to the sole]**

Months	Receipts	Expenditures	Profit	Deficit
1923:	*Lp. s. c.*	*Lp. s. c.*	*Lp. s. c.*	*Lp. s. c.*
July	2,354 1 15	1,322 8 99	1,031 2 16	
August	2,191 0 13	1,432 7 61	758 2 52	
September	1,778 6 98	1,421 0 11	357 6 87	
October	1,096 2 34	1,152 3 91		56 1 57
November	1,275 2 15	1,285 6 70		10 4 55
December	2,084 3 11	2,161 9 5		77 5 94
1924:				
January	1,980 0 84	1,381 6 26	598 4 58	
February	1,828 0 25	1,594 6 17	233 4 8	
March	1,813 0 17	1,594 8 5	218 2 12	
April	2,041 1 56	1,672 5 96	368 5 60	
May	2,381 9 46	1,589 0 4	792 9 42	
June	2,299 2 75	1,829 6 45	469 6 30	
Total	23,123 0 89	18,438 9 30	4,828 3 65	144 2 6
Balance		4,684 1 59		4,684 1 59
	23,123 0 89	23,123 0 89	4,828 3 65	4,828 3 65

The operating officials of the road for the fiscal year ended June 30, 1925, are the lessees, Jorge and Carlos Alvarez Calderon, Edificio Wiese, No. 404, Pisco, Peru, to whom inquiries concerning purchases for the road should be addressed.

Altitude.—The altitude of the various stations on the road are as follows: Pisco, 4.3 meters above sea level; mile 18, kilometer 28 (from Pisco), altitude 240.2 meters; Guadalupe, kilometer 63, altitude 404.37 meters; Ica, kilometer 73, altitude 422.2 meters.

Gauge.—The road is of 1.44-meter gauge throughout.

Grades.—The maximum grade of the road is one of 4 per cent.

Ballast.—Gravel and dirt are used as ballast.

Rails.—Rails weighing 30 kilos to the meter are used.

Water.—There is only one water station on the road, located at a point called "Mile 18," which is 18 miles distant from Pisco.

Fuel.—Coal, firewood, and cottonseed cake are used as fuel. At the present time there are no plans for changing the fuel used.

Signaling equipment.—Hand signals are used.

PACASMAYO & GUADALUPE RAILWAY

(INCLUDING EXTENSION TO CHILETE)

The history of the Pacasmayo & Guadalupe Railway dates back to March 8, 1870, when tenders were asked for the construction of a line to run from the port of Pacasmayo to San Pedro de Lloc and Guadalupe and eventually to be extended to Cajamarca. Señor Barbe's proposal for the construction of this road was accepted, and he was granted an exclusive privilege for 25 years and a guaranty of 7 per cent on the 2,700,000 soles expenditure. Reimbursement was to be made to the Government from the net receipts above 10 per cent of the capital.

In July, 1870, he transferred his concession, inclusive of 10 miles of track laid, to Garcia and Zamata, who added practically nothing to the road. On September 20, 1870, they stated that the Franco-German War prevented placing their bonds. The Government, having decided to construct the line as a national railway, contracted with Henry Meiggs on December 13, 1870, for its completion.

Meiggs was to commerce construction at Capasnique and to finish the work within two years of the treaty of peace between France and Germany. The Government had taken over the first 10 miles as far as Magdalena for 5,000,000 soles in bonds. This section was handed over to Meiggs on January 16, 1871. Construction on the section from Pacasmayo to San Pedro de Lloc was begun the same year, and the line was slowly extended into the interior during successive years.

In 1874, 91 miles of the line from Pacasmayo to Guadalupe and from Capasnique Junction to La Vina, 11 miles beyond Chilete, was opened to traffic. In 1877 the line was so badly damaged by floods that traffic was entirely suspended.

In the meantime Meiggs died (1877). The board of directors was unable to extricate the line from the difficulties in which it became involved, and the Government took it over at the end of 1878 without reestablishing traffic on the La Vina line.

During the war with Chile the railway was "administered" by various people or by the Government, until on September 22, 1884, when Screittmuller offered to take over the railway on a provisional 10-year lease, paying 1,500 soles monthly as rental, and depositing a sum of 25,000 soles. This proposal was accepted on September 23, 1884. He did not care to reconstruct the La Vina section if the Government decided to do so. The line was in very bad condition. A temporary wooden structure had been built across the river at Pay Pay and 5 miles of temporary track laid the other side so as to run trains up to Yonan (weather permitting), which remained the terminal point of this section for many years.

The railway was taken over by the Government in 1888, and on January 11, 1890, it was handed over to the Peruvian Corporation (Ltd.) in compliance with the contract for the cancellation of Peru's foreign debt.

The Peruvian Corporation in turn handed over the line to a subsidiary company, the Pacasmayo Railway, whose share capital is £200,000. The line is held under a 66-year lease, free of rent. The mole of Pacasmayo was considered as forming an integral part of the railway and was included in the lease.

The Peruvian Corporation repaired the line as far as Yonan, including the bridge over the Pay Pay River, but traffic between Ventanillas and Yonan was interrupted again in 1904.

The law of 1904 covering the program of future railway construction provided for the reconstruction of the line as far as La Vina and its construction to Cajamarca, and suggested that the use of hydroelectric power for the electrification of the railway be considered.

Another law in 1905 recommended reconstruction of the railway as far as Magdalena and Valdiza, and on December 15, 1905, a survey of the line as a railway of standard gauge (the gauge of the existing section) was made. Subsequently, in order to have a uniform gauge of 3 feet in the Departments of La Libertad and Cajamarca, it was decided on September 7, 1906, to build it on this gauge and subsequently to narrow the Pacasmayo-Yonan section to the same gauge.

On June 20, 1907, however, a general contract between the Government and the Peruvian Corporation settled all pending questions and the corporation agreed to complete the unfinished sections of three lines which it was working as standard gauge; this included the 24 miles from Yonan to Chilete, which was constructed and opened to traffic in 1908 and cost £139,327.

It was not until 1909 that rails were laid to Magdalena, a village only 19 miles from Cajamarca, but further floods washed away the portion above Chilete, and this mileage has never been rebuilt. Chilete is, therefore, the present railhead, and all traffic to and from Cajamarca must be carried on by mule train.

When the 1907 contract was signed with the Peruvian Corporation the section to Magdalena was left out, as it was doubtful whether it would not be more advisable to run the new line straight to Cajamarca instead of following the route of the old railway destroyed by the floods of 1878 between miles 65 and 71.

The land is exceedingly steep beyond Chilete. On a distance of 23 miles the difference of altitude is 2,890 meters; hence an average gradient of 13 per cent, which is prohibitive.

The route surveyed by the Peruvian Corporation comprised 17 zigzags in order to reach the summit of the cordillera. The great drawback of the route via Magdalena is the danger of floods and the difficulty of getting out of the valley, which can be accomplished only by a 3-mile tunnel. The line through the Lives Pass, Hualgayoc, and on the Cajamarca, leaving the existing line at mile 53, would have to descend 9,512 feet in a distance of 34 miles. Another, through the Puclish Pass from mile 58, is too costly and would involve a tunnel 1½ miles long. The relative lengths of the various projects are:

Magdalena Pass, Chilete, Magdalena, thence to the summit (at mile 48) and Cajamarca. Length, 62 miles.

Chilete Pass, with a 3 per cent gradient only, reaching the summit at the sixtieth mile. Total length, 92 miles.

Same route, Chilete, Molino, and to the summit (twenty-sixth mile), using a rack, then through Huambocancha to Cajamarca. Length, 39 miles.

Lives Pass, Quisden to the summit (sixty-sixth mile), through the Puclish Pass, ascending 9,512 feet by a 3 per cent maximum grade, through the Lives Pass. Length, 134 miles.

Puclish Pass, Llallan to the summit (seventy-first mile), through the Puclish Pass, ascending 10,050 feet, with a maximum 3 per cent grade. Length, 95 miles.

On account of the difficult gradients to be overcome, no decision has been made between the different routes, and it is possible that it will still be some years before Cajamarca is connected by rail with any other portion of the Republic.

At the present time the road is operated by the Pacasmayo-Guadalupe Railway Co., a subsidiary of the Peruvian Corporation, which has a lease on the road from the Government until 1973. There are 83 miles of track now in operation—65 from Pacasmayo to Chilete and 18 from Calpasnigues to Guadalupe. No construction is being carried on at the present time. From March 3 to July 17, 1925, traffic on this road was interrupted by floods.

Purchases are made according to the method indicated on page 203.

The finances of the road are indicated by the following table:

Items	1912–13	1913–14	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Gross receipts	£20, 897	£21, 479	£32, 808	£45, 722	£48, 463	£37, 041	£38, 222	£38, 635	£38, 635
Working expenses	15, 445	17, 556	21, 947	37, 921	34, 705	23, 859	25, 745	25, 063	25, 063
Net receipts	5, 452	3, 923	10, 861	7, 801	13, 758	13, 182	12, 477	13, 572	13, 572

The traffic of the road is indicated by the following table:

Items	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Passengers carried	146, 953	161, 053	263, 236	193, 696	188, 235	195, 043	150, 571
Tons of freight carried	35, 634	39, 345	33, 267	30, 031	30, 081	29, 288	21, 785

Gauge.—The road is of standard (4-foot 8½-inch) gauge throughout.

Grades.—The maximum grades do not exceed 3½ per cent.

Rails.—Rails weighing 60 pounds to the yard are used.

Ties.—In addition to California redwood, the native algarrobo is used for ties, 6 by 8 inches by 8 feet.

Fuel.—Coal (Australian) is used as fuel.

Bridges.—There are five bridges on the road.

The rolling stock and motive power are of American manufacture and include 7 locomotives, 14 passenger cars, 25 flat cars, 16 box cars. 6 cattle cars, and 2 baggage cars.

The repair shops at Pacasmayo are small, but fairly efficient.

CHIMBOTE RAILWAY

SURVEY OF DEVELOPMENT

The history of the Chimbote Railway dates back to the law of September 8, 1864, which authorized the Government to contract for the construction of a line from the port of Santa to Huaraz and to guarantee 25 per cent interest for 25 years. Mr. John Edmonston was intrusted with the studies on July 10, 1867.

A further decree of January 15, 1868, authorized the Government to issue 6 per cent bonds, with 2 per cent amortization to commence in 10 years, which the contractor was to accept at par value.

In 1868 Edmonston transferred his rights to Hartley, who in turn transferred them to Henry Meiggs in February, 1869, the Government recognizing Meiggs as the concessionaire.

On February 15, 1871, tenders for the construction of the railway, mole, and water supply, estimated at 38,000,000 soles, were asked. On June 9, 1871, Don Derteano y Valdeavallano's proposal of 33,500,000 soles, covering the entire line from Chimbote to Recuay, was accepted. Irregularities in the tenders occurred, and on August 8, 1871, other tenders were submitted quoting various amounts ranging as low as 25,450,000 soles. The Government refused to accept any of these, alleging that the differences in price were too great and that the studies would have to be rectified. In the same year Don Derteano y Valdeavallano obtained the contract for 24,000,000 soles and transferred the work to Meiggs on November 6, 1871. The first section of the line was opened in 1872. Part of this section was later washed away.

On January 18, 1877, Meiggs was appointed administrator of the line between Chimbote and Yuramarca, but he died shortly after this, leaving a committee to continue the work.

At the beginning of 1878 floods of the Rio Santa damaged the railway and interrupted traffic halfway beyond Suchiman. Financial difficulties and the war with Chile interrupted construction progress after 62 miles of rail had been laid.

On November 14, 1887, the Government declared that the administration of the successors of Meiggs had ended and called for the account. On January 10, 1888, the contract was rescinded because the line had not been finished within the stipulated time. It was necessary to expel the holders by military force.

The 1890 agreement for the cancellation of Peru's foreign debt gave the Chimbote Railway to the Peruvian Corporation as usufructuary for 66 years. The line at the time of this transaction was valued at 3,400,000 soles.

In 1891 the line was again badly damaged by floods and on September 27, 1893, the Peruvian Corporation was forced to repair it.

Only 32 miles were opened to traffic when the line was taken over by the Peruvian Corporation, but it was soon rebuilt to Tablones, 3 miles farther. Beyond this point the construction work which had already been started was handed over to the Peruvian Pacific Co.

The Peruvian Corporation lost its right to construct this extension by failing to comply with clause 3 of the contract of January 11, 1890, no modifying clause appearing in the 1907 contract.

The line from Chimbote to Tablones did not fulfill the object for which the construction had been undertaken.

In 1901 a concession for an extension to Recuay was granted to Don Puente and Leopoldo Arnaud. They, however, transferred their rights to F. J. Schaffer in 1902, and through his efforts the Peruvian Pacific Railway Co. (Ltd.) was floated in London. It was understood that this company would come to an agreement with the Peruvian Corporation whereby the railway would be transferred to the latter company so that it could be operated in connection with the Chimbote and Tablones section, then open to traffic. The new railway company was floated in connection with the Chimbote Coal & Harbour Syndicate, which Schaffer organized and which was registered on October 8, 1908. Work on the section from Tablones to mile 65 was commenced on November 1, 1906, but, because of lack of funds, work was stopped.

On July 1, 1908, the contract with the Peruvian Pacific Co. was rescinded in view of the small amount of track laid. A new proposal for the section from Tablones to mile 65 was submitted to the Government on October 8, 1908, by William C. Kaellin, representing R. G. Shaw & Co., of London, and the concession was granted to them.

In 1909 the concessionnaires, Shaw & Co., asked for an alteration of their contract, and on November 3, 1909, the Government agreed to grant a 6 per cent guaranty during 20 years on the section beyond mile 65. Such guaranty, however, was not to exceed £35,000 annually. In addition, a land grant was given, but it was expressly stipulated that the contract should lapse if the line was not completed up to mile 65 by October 31, 1910.

In the meantime the Peruvian Corporation had been authorized on March 2, 1910, to transfer to the Peruvian Pacific Railway (Ltd.) the first section of the Chimbote Railway. On August 18, 1911, the contract with Shaw was rescinded.

On May 10, 1912, a contract was signed with the Peruvian Corporation for the construction of the section from mile 65 to Recuay. The contract provided that the corporation should construct at its own expense the 19 miles from mile 65 to Apana, at a cost of £150,000, and make definite plans for the last section to Recuay and obligate itself to carry out the work. As payment the Government ceded to the corporation ownership of the Chimbote to Apana section and guaranteed interest on the capital of the Apana-Recuay section. Because of opposition in Congress the contract had to be withdrawn. As a result a new law was passed on December 19, 1912, whereby the Government was to have studies of this section made, and the section built, and was to purchase the original line from Chimbote and contract for surveys of the extension from Recuay to Huanuco.

The original section which had been conceded to Shaw (from Tablones to mile 65) was completed by the Peruvian Corporation on the Government's account in accordance with the contract of January 5, 1912. The Government appropriated the sum of £20,000 for its construction. Upon its completion on November 21, 1912, the line was handed over to the San Juan Mining Co., which used it provisionally with the understanding that the Government might reclaim it at any time under a fortnight's notice.

Schaffer's (Chimbote Coal & Harbor Syndicate) claims were settled by the payment of £80,000 in bonds of the internal debt with interest at the rate of 7 per cent per annum from January 1, 1918, and the Government is now the sole owner of the mileage beyond Tablones.

In 1917 construction was renewed by the Government, and early in 1924 the line had reached the Huaylas River, 86 miles from Chimbote. The ultimate destination of the road is Huaraz and Recuay. The Peruvian Government has set aside the sum of £5,000 a month to be expended on its construction. At the present time the road is 86 miles in length. As far as Tablones it is operated by the Peruvian Corporation on its own behalf, while the remainder of the line is operated under a special contract with the Government. As each successive section is completed it is turned over to the corporation for operation on Government account.

In July, 1919, it was proposed to construct a branch from Chuquicara, 47 miles from Chimbote, in a northerly direction up the valley of the Chuquicara River to the Ancos coal fields, a distance of 16 miles. The contract for this construction was secured by J. T. Glidden and Frank Fiorani. This branch is typically a mountain railway; there are four tunnels in the first 6 miles, and in a 2-mile section there are 27 retaining walls.

This extension is being financed by the Government with a portion of the revenue from the tobacco monopoly. In addition to serving the Ancos coal fields, the line will pass within 19 miles of the Magistral copper district, through the town of Santiago de Chuco, within 6 miles of the Chimborazo copper deposits, and through the towns of Huamachuco and Cajabamba. This is one of the richest mineral regions in Peru. It is expected that this branch will form a section of the Pan American Railway. The various sections of this route are as follows:

	Miles
Chuquicara to Ancos	11
Ancos to Tablachaca	14
Tablachaca to Abre de Tres Rios	22
Tres Rios to Cajabamba	29
Cajabamba to Cajamarca	50
Total	126

At the end of the fiscal year 1923 approximately 15 miles of roadbed had been graded and 1,300 tons of 50-pound rails purchased. From February 17 to July 4, 1925, traffic on the road was interrupted by floods. This, according to the company, is the reason for the financial loss.

It is planned eventually to extend the main line to Huaraz and Recuay, 149 and 165 miles, respectively, from Chimbote. At the present time the railhead is at mile 86, where the most difficult portion of the route begins. In this section is the gorge known as Canon de Pato, where the Santa River breaks through the western cordillera. This stretch covers 11 miles and will necessitate some 42 tunnels as well as several extensive viaducts. When it is finished the remainder of the construction will be relatively easy. At the present time the road runs from Chimbote to Huallanca, a distance of 86 miles. In addition there are two branches of approximately 4½ miles in length.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the fiscal year ended June 20, 1925, were as follows: Manager, A. C. Fox, Chimbote, Peru; superintendent, J. M. Cooper, Chimbote, Peru.

Purchases for the road are made as stated on page 203.

FINANCES

The finances of the road are indicated by the following table:

Items	1912–13	1913–14	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	1924–25
Gross receipts	£4, 379	£5, 216	£11, 209	£14, 153	£13, 767	£12, 290	£15, 495	£17, 078	£13, 859
Working expenses	7, 772	10, 612	7, 487	10, 832	13, 607	11, 875	14, 900	13, 636	16, 553
Net receipts	[1] 3, 393	[1] 5, 396	3, 722	3, 321	160	415	595	3, 442	[1] 2, 694

[1] Loss.

The road carried 3,257 passengers and 11,033 tons of freight in 1913, as compared with 27,994 passengers and 20,736 tons of freight in 1925.

RIGHT OF WAY

Altitude.—The road runs from 2.76 meters above sea level to 309 meters, the highest point on the road.

Gauge.—The gauge of the road is 0.914 meter.

Grades.—The maximum grade is one of 3 per cent, extending a distance of 10 kilometers. This grade commences at kilometer 70.

Curves.—The radius of the sharpest curve is 324 meters.

Ballast.—Gravel is used for ballast.

Ties.—Ties obtained in Chile and Colombia, of roble pellin and Colombian nato, 6 by 8 inches by 6 feet, spaced 2,250 ties to the mile, are used.

Rails.—Rails weighing 40 and 50 pounds per yard, in 30-foot sections, are used.

Water.—Water is secured from Santa River and stored in round iron tanks. The average distance between water stations is 17 kilometers.

Fuel.—Crown briquets, obtained from England, are used for fuel. At the present time no changes in fuel are contemplated.

Signaling equipment.—Telephones are used for signaling.

Clearance.—The clearance on the road is limited to 10 feet to top of rail and 6½ feet in width.

Maintenance.—The roadbed and track are kept in sufficiently good condition to withstand the traffic they are required to bear.

Bridges.—The following table indicates the number, length, construction, and location of the bridges on the road:

Number or name	Length	Material and type of construction	Location
	Meters		
1		Iron, Warren, with joint	Kilometer 81.62, Santa River.
2		Iron, small type	Kilometer 82.08, Santa River.
3		do	Kilometer 83.24, Santa River.
4		do	Kilometer 86.94, Santa River.
Aguas Claras	18	Steel rigid (under construction)	Kilometer 88.60, Aguas Claras River.
Taquilpon		Steel rigid, small type	Kilometer 90.30, Taquilpon River
5	52	Steel rigid, large type	Kilometer 104.50, Santa River.
6	46	do	Kilometer 108.40, Santa River.
7	48	do	Kilometer 124, Santa River.
8	48	do	Kilometer 135.50, Santa River.
Huaylas	26	Steel rigid, large type (under construction).	Kilometer 138.50, Huaylas River.

Tunnels.—The following table shows the number, length, and location of the tunnels on the road; all these tunnels are of unfinished rock:

Number	Length	Location
	Meters	
1	77.00	Kilometer 104.20.
2	14.50	Kilometer 107.96.
3	54.60	Kilometer 108.44.
4	62.10	Kilometer 109.16.
5	245.40	Kilometer 109.24.
6	66.00	Kilometer 109.68.
7	135.80	Kilometer 110.04.
8	169.00	Kilometer 112.56.
9	314.00	Kilometer 113.06.
10	47.50	Kilometer 113.62.
11	29.60	Kilometer 115.92.
12	30.00	Kilometer 116.12.
13	30.00	Kilometer 134.86.
Total	1,275.50	

MOTIVE POWER AND ROLLING STOCK

On May 1, 1926, the road had four locomotives, with three pair coupled wheels 28 inches in diameter (2–6–0) and a front truck 26 inches in diameter, weighing 28 tons each. Two locomotives have cylinders 15 inches by 16 inches, while the other two have cylinders 13 inches by 16 inches.

The cars include:

Flat cars:	
8 tons capacity each	9
10 tons capacity each	10
Cattle cars	5
Passenger cars	4
Baggage cars	2
Tank cars (23 tons capacity each)	4
Totals	34

Link-and-pin couplers, 2 feet 4 inches from top of rail, are used.

REPAIR SHOPS

There is one repair shop, at Chimbote, which employs 32 men. The shop has no foundry. An average of one locomotive and four cars are repaired yearly. The shop equipment comprises the following power-driven machinery and tools:

1 lathe 13 inches in diameter (Pollock & Macnab, Manchester).
1 lathe 22 inches in diameter (Smith & Beacock, Tannett, 1872).
1 lathe 52 inches in diameter (Smith & Beacock, Tannett, 1872).
1 table plane 36 inches in width (Smith & Beacock, Tannett, 1872).
1 table drill, 24 inches in width (Smith & Beacock, Tannett, 1872).
1 bolt threading machine, ¼ inch to 1 inch (Pollock & Macnab).
1 small drill (Boynton & Plummer).
1 vertical planer with table of 36 inches (Shepherd, Leeds, Hill & Co.)
1 angle planer of 6 inches.
1 grinding machine of 10 inches by 2 inches.
1 medium-sized shear and punch.
1 grindstone 4 inches in diameter by 6 inches in width.
1 saw for cutting metals, 4 inches in diameter.
1 bench circular saw, 18 inches in diameter.

TRUJILLO, LAREDO & MENOCHUCO RAILWAY

(OPERATED IN CONNECTION WITH THE TRUJILLO RAILWAY)

The section of the line from Trujillo to Laredo was constructed by the Peruvian Corporation (Ltd.) and from Laredo to Menochuco by the proprietors of the sugar estates in the Moche Valley. Practically all the traffic handled over this line is in connection with the sugar estates, although the road is open to the public. The first section was built and opened to traffic on November 15, 1905, and the second on July 22, 1906. The first section is 17 miles and the second is 50 miles long. At the present time the first section is owned by the Peruvian Corporation and the second section by the Chopitea Co., although the entire road is operated by the Peruvian Corporation in connection with the Trujillo Railway.

The financial and traffic returns of this railway are included in the Trujillo Railway.

The manager of the road as of June 30, 1925, was H. E. Dawson, located at Trujillo.

Purchases for the road are made by the Peruvian Corporation, as described in the section beginning on page 203.

Altitude.—The road runs from 38.20 meters above sea level to 320 meters, which is the highest point on the road.

Gauge.—The gauge of the road is 0.91 meter.

Grades.—The grades of the road vary from 1½ per cent throughout.

Curves.—The radius of the maximum curve is 35 meters.

Ballast.—Gravel is used as ballast.

Ties.—Ties of roble pellin, and algarrobo, secured locally and in Chile, 6 feet by 6 by 8 inches, spaced on 3-foot centers, are used.

Rails.—Rails weighing 30 pounds to the yard in 9-meter sections are used.

Water.—Water is secured from wells along the line and stored in iron tanks. Water stations are located at Laredo and Menocucho.

Fuel.—Coal, secured from Australia and Germany, is used as fuel. There is one fuel station located at Laredo. At the present time there are no plans for a change in fuel.

Signaling equipment.—Hand signals are used.

Maintenance.—The roadbed is in sufficiently good repair to accommodate the traffic it is required to bear.

Bridges.—There are eight bridges on the road, ranging from 3 to 8 meters in length. The largest of the bridges are constructed of iron beams on concrete bases, while the smaller are of wood.

The motive power and rolling stock for the fiscal year ended June 30, 1925, were as follows:

- Locomotives:
  - 1 of 0–8–0 wheel arrangement, weighing 30 tons.
  - 2 of 2–4–0 wheel arrangement, weighing 16 tons, cylinder 9 by 14 inches.
  - 3 of 0–6–0 wheel arrangement—
    - 1 of 24 tons.
    - 1 of 8 tons.
    - 1 of 12 tons.
- Rolling stock:
  - Passenger cars—
    - 1 first class, capacity 30.
    - 1 second class, capacity 15.
  - Freight cars—
    - 80 cane cars, capacity 15 tons each.
    - 50 cane cars, capacity 7 tons each.
    - 40 cane cars, capacity 4 tons each.

Link-and-pin and automatic couplers are used.

There is one repair shop, at Laredo, which employs 80 men. The shop can handle castings up to 10 tons. In addition to the road repair work the shop also repairs sugar machinery, etc.

PIURA-CATACAOS RAILWAY

This road was constructed in 1889 between the towns of Catacaos and Piura, a distance of 7 miles. Its extension in the near future, to Sechura and Morropon, is projected. The line was originally constructed as a light railway, but there was some difficulty about allowing trains to pass over the Piura Bridge. On April 12, 1893, trains were allowed to pass over this bridge on condition that the cars should be drawn across by animals and should not weigh more than 10 tons.

On November 19, 1908, the company agreed to pay customs duties on all its material from January 1, 1909, in exchange for which it was granted a concession in perpetuity. The road at the present time is owned by the Compañía Irrigadora de Piura, a private agricultural company, but it is operated by the Peruvian Corporation under a special contract.

On December 31, 1925, the road had 10.6 kilometers of main-line track in operation between Piura and Catacaos and 4 kilometers of branches. Plans are being formulated to extend the line from Catacaos southeast to the town of La Manuela, which will make the line 22 kilometers long.

Purchases are made directly by the administrator, E. A. Palacios, who should be addressed in care of the road at Piura.

The road's balance sheet for the fiscal year ended June 30, 1924, was as follows:

Dr.:		
Capital account		[1] Lp.2,000.000
Various creditors—		
Interest account	Lp.119.124	
Commission account	0.642	
		119.766
Profit and loss—		
Interurban passenger traffic	4,565.646	
Interurban passenger tramway traffic	118.140	
City tramway passenger traffic	87.840	
Commutation tickets (interurban traffic)	33.975	
Interurban freight traffic	3,217.202	
City tramway freight traffic	151.784	
City freight traffic	892.835	
Special trains	63.500	
Commissions on public work	31.850	
Loadings and unloadings	388.479	
		9,551.251
Total		11,671.017
Cr.:		
Irrigation company, capital account		Lp.416.667
Cash and bank account—		
Cash	Lp.21.287	
Bank of Peru and London	88.990	
American Mercantile Bank of Peru	3.337	
		113.614
Various debts—		
Accounts payable	162.037	
Irrigation company charge account	95.715	
National Government	48.930	
Advances on salary	43.205	
H. Harvey, private account	682.932	
Materials and supplies	5.178	
A. Checa, temporary account	1.277	
Various debts for commissions	18.600	
Accounts for settlement	9.900	
		1.067.774
Investments—		
Renewal of materials	927.119	
Machinery and tools	18.683	
Furniture and equipment	11.975	
Mules	16.000	
		973.777
Profit and loss—		
Interurban traffic	2,758.645	
City traffic	510,627	
Commissions	1,348.197	
Office	1,190.159	
Storage of permanent materials	159.865	
General expenses	349,253	
Special expenses	181.457	
Returns from contract labor	2,083.333	
Interest	116,634	
Loading and unloading	401.015	
		9,099.185
Total		11,671.017

The road carried 8,900 tons of freight during the fiscal year ended June 30, 1924, as compared with 10,607 tons carried in 1913. During 1913 the value of the merchandise transported was approximately Lp.702,000, as compared with Lp.590,000 transported during 1924.

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[1] Figures following decimal points represent fractions of a Peruvian pound.

During 1913, 183,587 passengers were carried, as compared with 280,816 passengers in 1924.

Altitude.—The road runs on an approximately level plain which is 30 meters above sea level.

Gauge.—The gauge of the road is 36 inches.

Grades.—The principal grade on the road is one of 2½ per cent.

Curves.—The maximum curve on the road is 1 to 8 degrees.

Ballast.—Clay and sand are used as ballast.

Ties.—Ties 5 feet in length and of various widths and thicknesses, spaced 17 inches on centers, are used. The principal material used as ties is that of the carob tree, obtained from the woods near the railway.

Rails.—Three different types of rails are used, weighing 12, 10, and 7 kilos, in sections of 5, 6, and 7 meters, respectively.

Water.—Water stations are located at the termination of the road at Piura. Water is pumped from the Piura River into two steel tanks which have a total capacity of 9 tons. During the dry season water is secured from beneath the river bed by means of a filtering gallery.

Fuel.—Wood is used as fuel. Fuel stations are located at the Piura station only. The principal wood used is that of the carob tree, which is obtained from the woods adjacent to the lines. At the present time there are no plans for electrification or changes in fuel.

Signal equipment.—Hand-operated signal equipment of simple design is used.

Maintenance.—All parts of the roadbed are kept in sufficiently good repair to accommodate the traffic.

Bridges.—There is one bridge 47½ feet long and 9½ feet wide, consisting of one span, supported by longitudinal steel beams and transverse wooden beams. This bridge is located at kilometer 4.

Tunnels.—There are no tunnels on the road.

For the fiscal year ended June 30, 1925, the road had in operation the following rolling stock:

Locomotives:
- Koppel, 3; 7 tons each; two pairs of coupled wheels; cylinders, diameter 6⅞ inches, length 16 inches, piston stroke 14 inches.
- American, 1; 18 tons; two pairs of coupled wheels; cylinders, diameter 10 inches, length 24 inches, piston stroke 18 inches.

Rolling stock:

First-class cars (capacity 22 passengers)	4
Second-class cars (capacity 22 passengers)	9
Freight and second-class cars (capacity 30 passengers)	3
Tramway car (capacity 18 passengers)	1
Freight cars (capacity 4 tons each)	22
Baggage car (capacity 4 tons)	1

Central buffer with link-and-pin couplers, spaced 13 inches from top of rail, are used.

There is one repair shop, located at Piura station, which when working to capacity employs 10 men. This particular shop has no foundries. A foundry shop, belonging to the Paita-Piura Railway and located in Paita, is used for foundry work. During the year ended June 30, 1924, four locomotives and 37 railway cars were repaired in the Piura shop. The following equipment is in use in the shop:

One Koppel lathe, German manufacture; length of bench, 12 feet; distance between ends, 6 feet 8 inches.

One table Koppel planer; length of table, 60 inches; width of table, 15 inches; run, 45 inches.

SUMMARY OF GOVERNMENT-OWNED LINES

The Government owned and operated railways are as follows:

	Kilometers
Ilo-to-Moquegua Railway	102
Ferrocarril de Tumbes a Puerto Pizarro	11
Huancayo-to-Ayacucho Railway	95
Cuzco-Santa Ana Railway	77
Northwestern Railway	212
Total Government owned and operated railways	497

ILO-TO-MOQUEGUA RAILWAY

SURVEY OF DEVELOPMENT

The road which runs from Ilo, the southernmost port of Peru, up through the Moquegua Valley to Moquegua, dates back to December 10, 1870, when the original concession for its construction was granted. On February 21, 1871, this concession was transferred to Henry Meiggs, who constructed the line and opened it to traffic on March 28, 1873. The cost was 5,025,000 soles.

The road was operated until the war with Chile in 1880, when certain sections of it were destroyed. It was not until 1907 that active reconstruction was commenced. The line was reopened to traffic in 1909. Operation of the road at that time incurred a loss of Lp.1,200 per year. On May 22, 1911, the Government leased the road to the Peruvian Corporation (Ltd.) for 30 years. This lease was not approved by the Senate, and for several years the road was operated under a temporary assignment. Eventually, however, the assignment fell through and the road was operated by the Government on its own account. The road at the present time is 101 kilometers in length, extending from Ilo to Moquegua and including 1½ kilometers of sidings and switches. It has no branches. The construction of additional mileage is not being considered at the present time. It is now owned and operated by the National Government on its own account. A yearly sum is appropriated in the Peruvian budget to cover the deficits incurred from operating the road. During 1923 this amount was Lp.3,000, while in 1924 Lp.96,158 was authorized. An additional Lp.4,259 was appropriated in 1924 to repair the existing and purchase additional rolling stock.

OPERATING OFFICIALS AND PURCHASES

Engineer Abel E. Angulo is administrator of the railway. The address is: Ferrocarril de Ilo a Moquegua, Ilo, Peru.

Purchases for the road are made by public tender through the director of public works, Ministerio de Fomento, Lima. Materials locally available are purchased by the administrator. Purchases are also made directly from abroad by the administrator, but not without the approval of the director of public works.

FINANCES

For the period from 1916 to 1923 the road had an income of Lp.37,997, while its expenditures amounted to Lp.46,560, showing a net loss of Lp.8,563.

TRAFFIC STATISTICS

The following table indicates the extent of the traffic on the road:

Year	Ton-kilometers	Metric tons carried	Passenger-miles	Number of passengers carried
1916	81,900,885	1,472,726	258,988	3,844
1917	97,461,108	1,804,932	215,606	4,005
1918	96,659,992	1,825,856	228,602	4,235
1919	98,502,569	1,819,906	216,684	4,277
1920	119,419,695	2,198,720	290,697	5,383
1921	100,796,568	1,987,737	281,473	5,663
1922	104,081,723	2,016,349	251,043	5,161
1923	106,745,011	2,018,220	223,431	4,347

RIGHT OF WAY

Altitude.—The road runs from 3 meters above sea level at Ilo to 1,375 meters at Moquegua, the highest point on the road.

Gauge.—The gauge of the road is 1.44 meters.

Grades.—The maximum grade on the road is 4.15 per cent.

Curves.—The radius of the maximum curve on the road is 80 meters.

Ballast.—Stone and sand are used as ballast.

Ties.—American pine and Chilean rauli ties, 8 feet by 8 by 6 inches, spaced on 0.70-meter centers, are used.

Rails.—Both iron and steel rails are used on the road. The iron rails are of 16, 18, 20, and 24 feet, while the steel rails are 32 and 33 feet in length. All weigh approximately 30 kilos per linear meter.

Water.—The water supply is good. At Ilo water is secured from the valley, a distance of 4 kilometers, while at the station of Salinas (kilometer 27 of the line) the water is taken from the valley by means of tank cars. At Hospicio station it is carried in the same form from El Conde (kilometer 80 of the line), a distance of 27 kilometers from Hospicio. Water in Moquegua is supplied by local city service. Both cylindrical and vertical storage tanks, with a capacity of 30 tons, are used. Water stations are located about 27 kilometers apart.

Fuel.—Petroleum, firewood, and coal are used as fuel—chiefly petroleum. Petroleum is obtained in Peru. Firewood comes from the Ilo and Moquegua Valleys. Coal is obtained from various sources. All fuel is stored at Ilo warehouses. At the present time there are no plans for change in fuel.

Signaling equipment.—Flags and kerosene lamps are used for signaling, as provided in the general regulations of railroads.

Clearance.—Clearance on the road is limited by the smallest cut, which is 5 meters in width.

Maintenance.—The roadbed has been kept in as good condition as possible up to the present time. In 1926 it is intended to improve those sections which are most in need of repair.

Bridges.—There are no bridges, but there are a few culverts in the Moquegua Valley.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in use on the road on June 30, 1925, are shown below; the locomotives were:

Number	Wheel arrangement	Weights, in tons	Size of cylinders
			Inches
1	ooOOO	64	18 by 26
2	oOOO	60	16 by 24
3	oOO	44	13 by 20
4	oOOO	60	16 by 24
5	oo	20	10 by 16

The cars are listed below:

2 mixed coaches, with capacity (each) for 26 first-class and 26 second-class passengers; four-wheeled trucks; tare, 14 tons.
1 coach for 100 second-class passengers; four-wheeled trucks; tare, 14 tons.
2 iron-frame box cars; four-wheeled trucks; tare, 13 tons; capacity, 12 tons.
2 wooden-frame box cars; four-wheeled trucks; tare, 12 tons; capacity, 12 tons.
4 iron underframe flat cars; four-wheeled trucks; tare, 12 tons; capacity, 14 tons.
2 water tank cars; four-wheeled trucks; tare, 11 tons; capacity, 14 tons.

"Janney" and chain couplers, 33 inches, are used.

All cars are equipped with Westinghouse air brakes.

REPAIR SHOPS

There is one repair shop, located at Ilo. When this shop is working at capacity it employs 11 men. The shop can handle a casting weighing 10 kilos. There is one foundry in the shop which is able to handle a casting weighing 2,000 kilos. The shop is equipped with the following power-driven machines:

1 water-tubular boiler, Wilcox, of 15 horsepower.
1 steam power motor of one cylinder and 15 horsepower.
1 gasoline motor, Fairbanks-Morse (1902), of one cylinder and 20 horsepower.
1 tapper, with taps and dies for nuts and bolts of common threads of from ½ inch to 2 inches, and dies for pipe of from 1 inch to 2 inches.
1 cold chisel, with [illegible] disks and pulley of 10-inch diameter by 2½ inches in [illegible].
1 lathe, of parted base, with wheels to cut threads; height from center to base, 9 inches; length of base, 10 feet.
1 drill; distance from center of table to column, 18 inches; pulley 14 inches in diameter by 3 inches in width.
1 wood lathe, with base 15 feet in length; height from center to base, 8 inches.
1 endless saw of 2 flywheels, 30 inches, and pulley 12 inches in diameter by 13 inches in width.
1 circular saw, with table 32 inches by 59 inches; dimensions of saw, 29 inches in diameter and pulley 16 inches in diameter by 4 inches in width.
1 grindstone bowl for stone 30 inches in diameter and 3 inches in width (has stone of 22 inches).
1 forge blower for pipe of 4 inches connected with pipe of 2 inches to the forge.
1 forge, with cast-iron base of 5 feet by 5 feet, with chimney 8 inches in diameter.
1 oxyacetylene welder, Werke, with accessories.

TUMBES & PUERTO PIZARRO RAILWAY

This road owes its origin to the Hydrographic Commission of Peru, which, in an effort to provide a port for the northern part of the country, caused one to be located at La Palizade, now called Puerto Pizarro. The road was designed to connect this port with Tumbes, the chief town of the Province, and was constructed and opened to traffic in 1909. It is owned and operated by the Government. At the present time it is 11.2 kilometers in length and has no branches or projected construction under way.

The following is a statement of the income and expenditure of the road for the calendar years 1913 and 1924:

Item	1913	1924
INCOME	Lp. s. c.	Lp. s. c.
Passenger revenue	207 3 76	260 6 85
Freight revenue	148 6 79	1,449 4 68
Government subvention (Lp..97 per month in 1913; Lp..59 9s. 72c. per month in 1924)	1,164 0 0	709 6 64
Deficit	138 2 21	
Total	1,658 2 76	2,419 8 17
EXPENDITURE		
Total amount spent	1,658 2 76	2,303 2 89
Balance		116 5 28
Total	1,658 2 76	2,419 8 17

NOTE.—It will be noted that a deduction of the general subsidy for 1913 shows a loss of Lp.1,302 2s 21c., while in 1924, deducting the subsidy, there was a loss of Lp.593 1s. 36c.

For 1924 the road carried 6,965 tons of freight and 10,375 passengers. The ton mileage was 76,618, while the passenger mileage was 114,125. The principal commodities carried were tropical products and charcoal.

The administrator of the road, on January 1, 1926, is Ing. Alberto Arenas, Tumbes, Peru.

Purchases for the road are made through the Dirección de Obras Públicas (Bureau of Public Works), Ministerio de Fomento.

Altitude.—The road runs from 3 meters above sea level to 6.90, the highest point on the road.

Gauge.—The gauge of the road is 0.76 meter.

Grades.—The maximum grade of the road is 1.38 per cent, extending for a distance of 150 meters, at kilometer 1.

Curves.—The minimum curve radius of the road is 300 meters.

Ballast.—Earth, gravel, and broken stone are used for ballast.

Ties.—Wood ties secured locally and steel ties from Germany are used. The wooden ties are 6 feet by 4 by 4 inches, while the iron ties are 5 feet by 4½ by 2 inches, spaced 0.67 meter on centers.

Rails.—Rails weighing 180 kilos per section of 8 meters are used.

Water.—Water secured from the Tumbes River is stored in iron tanks having a capacity of 6,000 liters.

Fuel.—Wood obtained locally is used as fuel. Fuel stations are 6 kilometers apart.

Recently it has been suggested that the Government should procure gasoline engines.

Signaling.—Hand signals are used.

Maintenance.—The condition of the road is fair, although it still can accommodate the present traffic.

Bridges.—There are 39 bridges on the road.

Tunnels.—There are no tunnels on the road.

As of January 1, 1926, the road had the following motive power and rolling stock in operation:

Locomotives: 2 Mogul type, weighing 30 tons, including tender, with cylinders 23 by 11 inches.
Rolling stock:
  2 first-class passenger cars.
  2 second-class passenger cars.
  2 other passenger cars.
  10 gondola freight cars.
  1 tank car for water with capacity of 5,000 liters.

Couplers 26 inches from top of rail are used.

There are no regulations regarding draft rigging and buffers.

There is one repair shop, located at Tumbes, which employs six men. The shop can handle castings up to 15 kilos in weight. The equipment used is very old.

HUANCAYO-TO-AYACUCHO RAILWAY

SURVEY OF DEVELOPMENT

The construction of the Huancayo-Ayacucho-Huancavelica Railway, to connect the Central Railway with the Southern Railway, was approved under the law of 1904. The preliminary survey was entrusted to a man named Weber on January 30, 1907. He advised the route via the Rio Mantaro Canyon until it met the Rio Huancavelica, thence through the Pachecna gorge to Alto Pongo, the highest point on the line, and down through the gorges of the Huayanay and Urubamba Rivers to the hacienda of Santa Rosa. From there the railway was to pass through the Rio Cachi gorge to Ayacucho. The length of the line would be about 260 kilometers and the gradients not more than 3 per cent. The cost of construction was estimated at £910,000.

The surveys were approved in October, 1907, and a contract entered into with Valdizan for definite plans. Funds were to be provided from revenue secured by tobacco taxation. Work commenced the latter part of 1907, but advanced slowly and was finally stopped in 1910. At that time there had been constructed about 20 kilometers of roadbed, and rails were laid a distance of 8 kilometers.

On September 2, 1910, Carlos B. Eddy, of New York, signed a contract for the construction of the railway from the place work was stopped. No work was done under this contract.

Construction work was resumed in 1918 by the Government, it having been decided that the route should follow the Mantaro Valley and pass through Huanta. The main line from Huancayo to Ayacucho is now open to traffic as far as La Mejorada, a distance of 77 kilometers. This point will be the junction of the Huancavelica branch, 18 kilometers of which have already been completed. In addition, 33 kilometers of roadbed and numerous bridges, tunnels, and other works have already been finished. It is expected that the entire branch will be opened shortly. While no definite plan has yet been formulated, it is thought that the branch will be continued on to Huancavelica, thence to Castrovirreina, and from there to a southern seaport, probably Pisco. In that event, if the line from La Mejorada should later be extended to Ayacucho, it would only be a branch of the main line even though it was extended to Cuzco from Ayacucho. At the present time the road has 77 kilometers of track in operation from Huancayo to La Mejorada and 18 kilometers of branch track extending from La Mejorada toward Huancavelica.

FINANCES

Although the road and branch is opened to traffic part way, its operation is not profitable at the present time. This is due to the fact that traffic on the line is provisional only, preferential attention being given to transportation of equipment and materials to complete the construction of the road. From July, 1923, to November, 1925, the passenger revenue was £10,800 and the freight revenue £14,500. During the same period the road carried 14,700 tons of freight and transported 40,900 passengers.

OPERATING OFFICIALS AND PURCHASES

The official in charge of the operation of the road is Ing. Jose G. Voto Bernales, administrador y director, La Mejorada (Campamento), Barranco (Santa Isabel 130).

All purchases are made by the Dirección de Obras Publicas, Ministerio de Fomento, Lima, Peru.

RIGHT OF WAY

Altitude.—The main line runs from 28.19 meters above sea level to 33 meters, which is the highest point. The highest point on the branch line is 38 meters. On the proposed branch to Castrovirreina the highest altitude will be 4.960 meters. This road, when constructed, will be the highest railway line in the world and will surpass the altitude of the Central Railway of Peru, which is 4,774 meters only in the tunnel of Galera, which incidentally is the highest and most difficult engineering feat undertaken.

Gauge.—The gauge of the road is 1.91 meters.

Grade.—The maximum grade on the main line is 1.5 per cent and on the branch 3.5 per cent.

Curves.—The minimum curve radius is 80 meters.

Ballast.—Gravel and crushed stone are used for ballast.

Ties.—Ties are of roble pellin, colorado, and redwood obtained from Chile and the United States. 6 feet by 8 by 6 inches. spaced on 1.70-meter centers.

Rails.—Rails weighing 50 pounds to the yard, in 30-foot sections, are used. A cross section of the rail is as follows: Height, 98 millimeters; width of upper base, 54 millimeters; width of lower base, 98 millimeters; flange, 20 millimeters; thread or face, 20 millimeters.

Water.—Water is obtained from streams along the right of way and pumped into iron and reinforced concrete tanks. Water stations are approximately 30 kilometers apart.

Fuel.—Coal from Australia and local mines is used. The local coal is anthracite of large size, while the other is anthracite but in small pieces and containing much sulphur. Fuel stations are approximately 70 kilometers apart. At the present time there are no plans for electrification, but it is thought that the fuel will be changed to petroleum, which is cheaper. Because of that fact, locomotives purchased for the line are equipped with petroleum tanks so that the change can be made at any time. Quotations have already been requested on tank cars and petroleum tanks, and it is thought that next year (1927) coal will not be used for fuel any more.

Signaling.—There is no signaling equipment in use.

Maintenance.—The roadbed and track are in excellent condition. Permanent maintenance groups consist of a foreman, 1 road man, 1 nail driver, and 12 other workmen. This number is increased in the rainy season according to the necessity.

Bridges.—There are three bridges in use on the main line and four on the branch. Between kilometers 101 and 129 (Huancavelica) there are being completed at present necessary works to install 12 bridges, with plate girders; all these bridges are of iron supported on masonry work of square hewn stones.

Tunnels.—There are 30 tunnels located between kilometers 16 and 112, and 10 more under construction between kilometers 112 and 129. The tunnels vary in size from 20 to 152 meters in length, the average length being about 60 meters.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock on the road as of January 1, 1926, were as follows:

Locomotives:
- 3 Mogul locomotives of 2–6–0 class, 8–24 D (Baldwin Locomotive Works), weighing 50 tons and with cylinders 17 by 20 inches.
- 1 switch engine, 0–4–0, weighing 14 tons, having a cylinder 10 by 16 inches.

Rolling stock:
- 5 30-ton passenger cars (of German make).
- 2 25-ton second-class passenger cars.
- 3 locally constructed passenger cars.
- 4 box cars.
- 1 stock car (locally constructed).
- 11 flat cars (United States manufacture).

Automatic couplers are used, 2 feet 5 inches from top of rail.

Regulations for draft rigging and buffers are contained in the Peruvian "Reglamento General de Ferrocarriles."

REPAIR SHOPS

At the present time a repair and carpenter shop is being equipped at Huancayo on land owned by the railway. Equipment for foundry work is being installed, consisting of a bronze foundry with two crucibles and a turning oven to melt iron, with a capacity of 2 metric tons. The following list shows the power-driven machinery and tools which have been installed (these tools are driven with a Campbell motor, horizontal type, of 40 horsepower):

- 1 Barnes drill press of 15 inches.
- 2 Barnes drill presses of 22½ by 1½ inches.
- 1 radial drill.
- 1 machine for burnishing and grinding.
- 2 first and second size punch and shears.
- 1 16-inch shaper, Danie.
- 1 plane of 6 feet.
- 1 Wells tube cutter, No. 3.
- 2 saws for metal, No. 78.
- 1 circular hanging saw, No. 24.
- 1 hack saw, model P–3, of 6 by 12 inches.
- 1 lathe, Menopol, of 10 inches by 3 feet 5 inches.
- 1 precision lathe, Milano, No. 3.
- 1 lathe, 8 feet.
- 1 Universal milling machine, type 10 U. V.
- 1 forge with fan, etc.

CUZCO-SANTA ANA RAILWAY

The construction of this road was provided for in a law passed in 1907. It will connect the Urubamba Valley with the port of Mollendo, passing through a well-populated and developed region. At the present time the road has been constructed a distance of 48 miles from Cuzco. It has 6 miles of main-line track and 9⅓ miles of branch track under construction. When it is completed it will be approximately 100 miles in length.

Financial information on the road is not available at the present time, as it has been in operation only since 1923. During the calendar year 1924 the road carried approximately 34,568 tons of freight and 36,385 passengers.

The road is owned and operated by the Government, and all purchases are made through the Ministerio de Fomento, Lima, Peru. The administrator is Carlos Romero Stomayor, F. C. del Cuzco a Santa Ana, Cuzco, Peru.

Altitude.—The road runs from 1,000 meters above sea level at Santa Ana to 3,680 meters at El Arco, which is the highest point on the road.

Gauge.—The gauge of the road is 0.91 meter.

Grades.—The maximum grade is one of 3.5 per cent compensated.

Curves.—The maximum curve radius is 60 meters.

Ballast.—Gravel and broken stone are used for ballast.

Ties.—Wooden ties obtained locally from Colombia and from the United States, 6 feet by 8 by 6 inches, spaced on 0.60-meter centers, are used.

Rails.—The Vignola type of rail, weighing 35 pounds to the yard, in 24-foot sections, is used.

Water.—Water is secured from rivers and pumped into cylindrical tanks made of iron plates. Water stations are approximately 25 kilometers apart.

Fuel.—Coal briquets obtained in Great Britain are used as fuel. Fuel stations are approximately 77 kilometers apart. At the present time there are no plans for any change in fuel.

Signaling equipment.—Hand signals are used.

Maintenance.—The road is in fair condition.

Bridges.—There are 11 bridges on the road, as follows:

Location	Name	Length, in meters	Description
Kilometer:			
18	Poroy	7	1 span, plate girders.
27	Pichocc	30	3 spans, plate girders.
27	Suaray	8	1 span, steel plates.
31	Izcuchaca	16	Do.
46	Paroposo (2 bridges)	[1] 16	Steel plates.
47	Colpa	7	Plate girders.
63	La Torre	54	3 spans, plate girders.
73	Tancacc	16	3 spans, steel plates.
1	Branch to Urubamba	11	Plate girders.
4	do	62	3 spans, plate girders.

[1] Each.

Tunnels.—There are no tunnels on the road.

The locomotives include two of Mogul type, 2–6–0, and one of Mikado type, 2–8–2.

Couplers are 1.66 meters from top of rail.

There is one repair shop, located at Cuzco, which employs 25 men. The foundry connected with the shop can handle castings weighing 250 pounds. The power-driven machinery and tools comprise wood lathes, planes, saws, and a drill.

NORTHWESTERN RAILWAY

SURVEY OF DEVELOPMENT

The Northwestern Railway dates back to 1868, when the Government granted a concession to Don Modesto Basadre to construct a road from Lima to Chancay, with branches to the port of Lima and to points in the valleys of Huacho or Huraz. The road was partially constructed in 1870, but was later destroyed by the Chilean Army, with the exception of the Lima-Ancon branch, which was later turned over to the Peruvian Corporation and became part of its system. This concession was never completely carried out. On December 12, 1906, another concession was granted by the Peruvian Government to the Peruvian Railway Construction Co. to build a road from Lima to Sayan via Ancon, Huacha, and Huara, a total length of 255 kilometers. The following year the Northwestern Railway of Peru was organized on October 31, 1908. It was not, however, until 1911 that construction work was undertaken on this line. The road was opened to traffic in July, 1912.

In August, 1921, a settlement was arranged between the company and the Government as to outstanding financial differences, which resulted in the transfer of the line to the Government. On August 31, 1921, the following decree was made public:

> In view of official letter No. 2886, of the General Bureau (Dirreción General) of Finance, wherein announcement is made that the stipulations have been completed in connection with the arrangements made for the acquisition of the Lima (Ancon)-Huacho Railway:
>
> Be it resolved:
>
> The Director of Public Works is authorized as representative of the Government to receive the said railway, under inventory in triplicate, subject to the stipulations involved in the transactions.
>
> (Initialed by the President of the Republic; signed "Curletti, Minister of Fomento.")

In connection with the transaction above referred to, and on completion of all the necessary formalities, the Government will take over control and ownership of the Northwestern Railway of Peru. It is understood that arrangements have been made with the bondholders whereby a certain amount of the company's liabilities have been met in cash and cancellation of the remainder effected with Peruvian Government bonds, which the shareholders have accepted in lieu of the railway bonds.

The transaction involves an approximate sum of Lp.820,620.

The sections of the Northwestern Railway actually operating are as follows:

	Kilometers
Ancon to Huaral	39
Huaral to Huacho	80
Huacho to Sâyan	56
Huaral-Chancay branch	13

There is no construction going on, and it is not believed that any extensions will be made.

The sale of the line to the Government was financed by the gold-bond issue of 1920 of £820,620, with interest at 5 per cent, amortizing in 26 years at 2 per cent per annum. These bonds were accepted by the shareholders in exchange for first-mortgage 5 per cent debentures of the railway company at the rate of £15 9s. 2d. in Government bonds for each £20 railway bonds, or a total of £932,220.

The outstanding first-mortgage debentures of the company (£932,220) were exchanged for 5 per cent gold bonds of 1920 of the Republic of Peru on the basis of one Government bond of £10 and a fractional certificate for £5 9s. 2d. for each railway bond of £20 or 504 francs.

The second-mortgage bonds of the railway company were subsequently paid off. The share capital is £594,262 in shares of £1 (part of £600,000 authorized), all of which was allotted credited fully paid in part payment for the concession and for construction and equipment.

OPERATING OFFICIALS AND PURCHASES

The road is owned and operated by the Government, and all purchases are made through the Ministerio de Fomento, Lima, Peru.

FINANCES

Following is a statement of the income account for the year ended June 30, 1913 (details are not available for any more recent year):

Items	Total		Dollars per mile
	Sterling	Dollars	
Gross receipts	£29, 307	146, 535	1, 127
Operating expenses	25, 779	128, 895	991
Net receipts	3, 528	17, 640	136
Other income	62, 301	311, 505	2, 396
Total net income	65, 829	329, 145	2, 532
Fixed charges [1]	83, 907	419, 535	3, 227
Deficit	18, 078	90, 380	695

[1] Fixed charges include $44,955 (£9,991) expenses and discount re debenture issues.

The operating expenses consisted of:

Items	Total		Dollars per mile
	Sterling	Dollars	
Maintenance of way	£6, 320	31, 600	243
Maintenance of equipment and locomotive power	11, 712	58, 560	450
Traffic and telegraph expenses	5, 138	25, 690	198
General expenses	2, 609	13, 045	100

The ratio of operating expenses to gross receipts was 87.9 per cent. "Other income," above, includes $311,440 (£62,288) interest guaranteed by the Government of Peru under the terms of the concession.

TRAFFIC STATISTICS

During the calendar year 1924 the road transported 2,924,019 metric tons of freight and carried 57,659,398 passengers. The principal commodities handled are sugar, salt, and cotton.

RIGHT OF WAY

Gauge.—The gauge of the road is 3 feet.

Fuel.—Australian coal and briquets are used as fuel.

Ties.—California redwood ties, 5 by 7 inches by 6 feet, are used.

Bridges.—There are two bridges on the line, the Chancay (12 meters) and the Huacho (60 meters).

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock on the road consist of 9 locomotives, 92 freight cars, and 19 passenger coaches.

SUMMARY OF INDEPENDENT RAILWAYS

The independently owned and operated railways in Peru are as follows:

	Kilometers
Eten to Cayalti Railway	77
Reparticion-Alpas Railway	27.25
Supe-Barranca-Pativilca Railway	67.3
Supe-San Nicolas Railway	6
Cartavio Sugar Co. Railway	10
Eten Railway	94
Empresa del Muelle Ferrocarril de Chicama (Ltda.)	33.8
Lines of Compagnie des Mines de Huaron	43
La Ensenada-Chucarapi Railway	20
La Ensenada-Pampa Blanca Railway	20
Vanadium Corporation of America Railway	25
Tambo de Mora-Chincha Alta Railway	15
Paramonga Railway	7.5
Talara Oil Field Lines	100
Cerro de Pasco Railway	232
Cerro Azul-to-Canete Railway	10
Total	787.85

ETEN-TO-CAYALTI RAILWAY

The Eten-to-Cayalti Railway dates its history from May 29, 1903, when a perpetual concession was granted by the Government to the Aspillaga brothers for the construction of a line running from the port of Eten to the Cayalti sugar estate, a distance of 37 kilometers. The road is independently owned and operated in the interest of the sugar mills. However, it does handle some public traffic. There are approximately 40 kilometers of track on the estate.

Inasmuch as the road is privately owned and operated, no financial information is available. During 1924 the road carried approximately 345,000 tons of freight, mostly sugar, and approximately 3,000 passengers.

The official in charge of the operation of the road is Ramon Aspillaga, Gerente, Beitia 44, Lima, Peru. Purchases are made direct by Señor Aspillaga.

Altitude.—The road runs from sea level to 20 meters, which is the highest point.

Gauge.—The gauge of the road is 0.60 meter.

Grades.—The maximum grade is one of 1.40 per cent.

Curves.—The maximum curve is one of 8 meters.

Ballast.—Sand is used for ballast.

Ties.—Ties of roble pellin and redwood, obtained from Chile and the United States, 5 feet by 5 by 6 inches, spaced on 0.50-meter centers, are used.

Rails.—Rails weighing 35 pounds to the yard, in 12-meter sections, are used.

Water.—Water is secured from the Eten River and stored in iron tanks. Water stations are approximately 16 kilometers apart.

Fuel.—Wood obtained locally is used for fuel. There is only one fuel station, which is located at Cayalti. There are no plans for electrification or other change in fuel at the present time.

Signaling equipment.—There is no signaling equipment.

Maintenance.—The roadbed is in good condition.

Bridges.—There are three bridges constructed of iron and wood. The longest of the bridges is 40 feet in length.

The motive power and rolling stock for the calendar year ended December 31, 1925, included:

10 locomotives weighing 18 tons each.
2 first-class passenger cars.
2 second-class passenger cars.
1 Pullman car.
1 first and second class passenger car.
18 platform cars.

There is one repair shop, located at Cayalti, which employs 10 men.

SUPE-BARRANCA-PATIVILCA RAILWAY

The history of this road dates from August 20, 1897, when a concession was granted for the construction of a road from Supe, a small town north of Huacho, to the neighboring towns of Barranca and Pativilca. The concession was valid for 50 years, after which the line was to revert to the Government. The original concession lapsed and a new one was granted on June 19, 1899, to Don Lucas M. Araujo for a road to run between Supe and Barranca. On February 7, 1902, this concession was transferred to the Empresa de Ferrocarril de Supe a Barranca, which opened the line to traffic to Barranca on August 10, 1903, and the remainder to Hacienda Huaito was constructed in 1909. In addition, two other independently owned roads—the Paramonga Railway, extending from Paramonga to the Rio Pativilca, a distance of 7.5 kilometers, and the Supe-San Nicolas Railway, extending between these two places, a distance of 6 kilometers—are operated in connection with these lines. A description of these two roads will be found later. At the present time this particular road has the following track in operation:

		Kilometers
Supe to Barranca		5.6
Barranca to La Cruz	4.1	
Branch to the Pativilca River	2.4	
		6.5
Arguay (near Barranca) to Tambo Viejo		3.4
Barranca to Hacienda Huaito		10.4
Reparticion to Alpas	26.1	
Branches	1.5	
		27.6
Reparticion to Pativilca River (town)		1.0
Total		54.5

The road is of 0.60-meter gauge throughout, with the exception of the lines from Supe to Hacienda San Nicolas and from Pativilca River to Hacienda Paramonga. On these two lines a third rail has been laid so that they have an additional gauge of 1.06 meters. The gradients throughout do not exceed 3 per cent. Sand is used as ballast. Ties, 6 by 6 inches by 5 feet, spaced 2 feet from center to center, are used throughout. Rails weighing 18 to 20 pounds to the yard are used. The rolling stock consists of 6 locomotives (Fowler and Koppel), 6 passenger coaches, and 117 freight cars of various types. The repair shops are located in the town of Barranca. These shops are used for all the railways in the Supe and Pativilca section.

Purchases for the road are made by the manager, E. Dorca Garcia, who should be addressed in care of the road at Supe.

SUPE-SAN NICOLAS RAILWAY

The history of this road dates from July 23, 1898, when a concession was granted to Don Hanry Barreda, president of the San Nicolas Agricultural Co., for the construction of a railway running 6 kilometers from Supe to San Nicolas. Originally a concession was held for the construction of such a road by the Supe-Barranca Railway, which, however, was unable to fulfill the conditions of the concession. The road was built and opened to traffic in 1901 and is used exclusively for transporting the products of the San Nicolas Hacienda.

The road is of 1.06-meter gauge, with a third rail to make a 90-centimeter gauge to accommodate the rolling stock of the Supe-Barranca Railway. The grades on the road do not exceed 1.6 per cent. The rails average 24 pounds to the yard.

Purchases are made by the manager of the company, who should be addressed in care of the railway at San Nicolas.

ETEN RAILWAY

The history of the Compañía del Ferrocarril y Muelle de Eten dates from July 31, 1867, when the Government granted a concession to Don Jose Antonio Garcia to construct a railway from the port of Eten to Chiclayo, with a branch to Lambayeque. The concession was valid for 99 years. On October 19, 1867, the concessionnaires transferred their rights to a branch corporation, which constructed a line from Eten through Chiclayo to Lambayeque and opened it to the public on July 1, 1871. Two years later the line was continued and opened for operation as far as Ferrenafe. A branch was opened from Chiclayo to Patapo, a distance of 26 kilometers, on March 28, 1874. In return for granting these concessions the road was to be turned over to the Government at the end of 99 years (March 28, 1973).

From that time until October 25, 1913, when the company acquired the old Pomala Railway, which is now known as the Pucala Branch, practically no additional mileage was constructed. At the present time the road has 42 kilometers of main-line track in operation and 52 kilometers of branches. It is proposed to construct an additional 19.5 miles from Ferrenafe to Motupe in the near future.

The operating officials of the road for the calendar year 1924 were as follows:

Chairman, Alberto Ayulo, Lima (president).
Directors:
  Nicanor M. Carmona, Lima.
  Carlos M. Espinoza.
  Alfredo Ferryros, Lima.
  J. A. Loredo, Lima.
Manager, J. A. Loredo, Lima; cable address, Ferroeten, Lima; postal address, P. O. Box 444, Lima.
Superintendent, A. F. Leon, Eten.
Accountant, T. N. Ruiz, Eten.
Engineer, Emilio Vargas, Eten.
Master mechanic, Carlos Bossia, Eten.

All purchases for the road are made directly by the company from its offices in Lima.

Financial statements are not available. The company reports that it has no debts of any kind.

The ton-miles of freight for the calendar year 1923 were 1,475,272. The total number of tons of freight carried was 88,160. The principal commodities carried were cotton and sugar, though no figures on the amount of each can be had.

The passenger-miles for 1923 were 5,501,514. The number of passengers carried was 719,462.

Altitude.—The road runs from 12 feet above sea level to 285 feet, the highest point on the road.

Gauge.—The line is of standard (4-foot 8½-inch) gauge throughout.

Grades.—The maximum gradients do not exceed 2 per cent on the main line between Eten and Ferrenafe, while on one section on the branch between Chiclayo and Patapo they reach 6 per cent.

Ballast.—Stones and sand are used as ballast.

Ties.—Ties made from American red pine, Peruvian mangle, "nato" from Colombia, and "oak pellin" from Chile, 6 by 8 inches by 8 feet, spaced 70 centimeters apart, are used.

Rails.—Standard 60-pound A. S. C. E. rails, section 6040, are used throughout.

Water.—Water is obtained from the Eten and Laybayeque Rivers, the distance between water stations being 7.45 miles. The tanks are steel cylinders, supported by pillars of the same material.

Fuel.—Wood and coal are used as fuel. The former is obtained locally, while the latter is imported from Australia. There are no plans for electrification or other changes in fuel at the present time.

Signaling equipment.—Signal flags and kerosene lamps are used for signaling.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate as heavy traffic as they were designed to carry.

Bridges.—There are four bridges of steel and wood construction, the longest of which is 270 feet, across the Eten River. The new bridge is constructed of four steel spans, three of which are 60 feet in length and one of 90. The structure was placed on 10 steel caissons filled with concrete, each 5 feet in diameter, and sunk to a depth of from 25 to 33 feet below the river bed. The bridge is designed to carry a load of 80 tons.

Tunnels.—There are no tunnels on the line.

The rolling stock on the road (for the most part of American manufacture) during the calendar year 1924 was as follows:

Locomotives.—Five of 45 tons, 3 of 20 tons, 1 of 10 tons. Wheel arrangement: Two pairs of coupled wheels and front truck of four wheels. Size of cylinders, 14 inches with 22-inch piston stroke and 11 inches with 16-inch piston stroke.

Cars.—Fifteen passenger, 80 freight, 1 rail motor.

There is one shop located at the port of Eten which when working at capacity employs about 110 workmen.

EMPRESA DEL MUELLE Y FERROCARRIL DE CHICAMA (LTDA.)

These railroads, generally speaking, are plantation lines owned and operated by Gildemeister & Co. The first of the roads to be constructed runs between Chicama and Pampas. It was opened to traffic in 1898 and extended to Huabal in 1906. This road is 35 kilometers in length and 0.91-meter gauge. In 1906 a line 2 kilometers long, of 1.06-meter gauge, was constructed between Casa Grande and Chicama, while in 1920 a line of 0.91-meter gauge was completed from Casa Grande to Puerto Chicama, a distance of 28 kilometers. The short stretches in and around Casa Grande, called the "Casa Grande lines," were opened at various times between 1906 and 1920. These lines total 33.8 kilometers of track in operation.

No financial information is available regarding this line. The capital of the company, however, is Lp.100,000. While the road is strictly an industrial railway, in 1924 it carried 60 passengers daily in addition to about 500 tons of freight, mostly sugar cane.

Purchases for the road are made directly by Gildemeister & Co., Judios 270, Lima. Purchases are made by public tender.

Altitude.—The road runs from sea level to 8 meters above sea level, which is the highest point.

Gauge.—The gauge of the various lines is given in the first paragraph of the text.

Grades.—The maximum grade is 1½ per cent.

Curves.—The radius of the sharpest curve is 50 meters.

Ballast.—Gravel is used for ballast.

Ties.—Ties of roble pellin, obtained from Chile, 6 feet by 8 by 6 inches, spaced on 3-foot centers, are used.

Rails.—Rails weighing 17 kilos per meter, in sections of 9 meters, are used.

Water.—Water is carried from wells along the right of way and stored in iron tanks. Water stations are approximately 20 kilometers apart.

Fuel.—Both coal and petroleum are used for fuel. There are two fuel stations on the system, one at Casa Grande and the other at Chicama.

Signaling.—Hand signals are used.

Maintenance.—All parts of the roadbed are kept in sufficiently good repair to stand the traffic.

Bridges and tunnels.—There are no bridges or tunnels on the road.

As of January 1, 1926, the road had 18 locomotives, 300 cane cars, and 10 passenger cars in operation.

Automatic couplers, 70 centimeters from top of rail, are used.

No draft rigging or buffers are used.

There are two repair shops, located at Casa Grande and Puerto Chicama. The shops are equipped with all kinds of electrically driven tools and employ approximately 50 people. The shops can handle castings up to 10 tons.

LINES OF COMPAGNIE DES MINES DE HUARON

This road was constructed in 1912 by the Compagnie des Mines de Huaron and runs from Shelby, a station on the Cerro de Pasco Railway, to San Jose de Huaron, a distance of 30 kilometers, with a branch from San Jose to the mines at Huaron, a distance of 13 kilometers. It is planned to extend the road eventually from Huaron to Chancay.

Inasmuch as the road is privately owned and operated, no financial information is available. The road, however, carries approximately 2,500 tons of freight, mostly copper bars and other ores, and 2,500 passengers.

The operating officials of the road are as follows: Luis Gasquel, general manager, Huaron, Peru; Marcel Tuillier, director, Huaron, Peru.

Purchases are made directly by the company. Information regarding purchases should be addressed to the general manager.

Altitude.—The road runs practically on a level at an elevation of 4,300 meters.

Gauge.—The gauge of the road is 1 meter.

Grades.—The maximum grade is one of 3 per cent, between San Jose and San Jose-Huaron.

Curves.—The radius of the maximum curve is from 10 to 11 meters.

Ballast.—Gravel is used for ballast.

Ties.—Ties of mangle wood and roble pellin, obtained from Ecuador and Chile, 6 feet by 8 by 6 inches, spaced on 80-centimeter centers, are used.

Rails.—Rails weighing 30 pounds to the yard, in 20-foot sections, are used.

Water.—Water is obtained from the Rio Blanco near Shelby and stored in iron tanks. Water stations are approximately 15 kilometers apart.

Fuel.—Coal obtained locally near Oroya is used as fuel. There is one fuel station, located at Shelby. At the present time no plans are contemplated for any change in fuel.

Signaling equipment.—Hand signals are used.

Maintenance.—All parts of the roadbed and track are in sufficiently good repair to withstand the traffic they were designed to carry.

Bridges.—There are five bridges on the road, one of which is 20 meters in length (over the Rio Blanco). All bridges are constructed of timber on stone and cement pillars.

Tunnels.—There are no tunnels on the road.

The motive power and rolling stock of the road for the calendar year ended December 31, 1925, were as follows:

3 American Porter locomotives, weighing 25 tons each, with cylinders of 8 by 14 inches.
10 freight platform cars and 1 cane car.
1 passenger car, second class, with capacity of 40.

Link-and-pin couplers are used at an elevation of 0.60 meter from top of rail.

There are no regulations in effect regarding draft rigging, couplers, and buffers.

There is one repair shop, located at San Jose, which employs 20 men. This shop also takes care of the repair work for the mines. The shop can handle castings up to 200 kilos in weight. Various lathes, planes, drills, and other power-driven machinery are installed.

LA ENSENADA-CHUCARAPI RAILWAY

This road was constructed by the Romana brothers, proprietors of the Chucarapi estate, under authority granted to Eduardo L. de Romana on April 7, 1922. The road at the present time runs from Ensenada, a station on the Southern Railway of Peru, to the Chucarapi estate, a distance of approximately 20 kilometers. Originally the road was used as an industrial line, but a decree of May 2, 1924, authorized it to be placed in operation as a public utility, provided that an official inspection of the rolling stock and property showed no apparent defects. The line will eventually be extended to La Punta, a few miles above Chucarapi.

Inasmuch as the road is privately operated, no financial or traffic information is available. The principal freight that the road carries is sugar.

The road is operated by Luis E. de Romana, Arequipa, Peru, who makes all purchases.

Gauge.—The gauge of the road is 0.60 meter.

Ballast.—Dirt and gravel are used as ballast.

Ties.—Ties are of rauli wood, obtained from Chile, 7 feet by 6 by 6 inches, spaced on 3-foot centers.

Rails.—Rails weighing 20 pounds, in 30-foot sections, are used.

Water.—Water is obtained from the Tambo River.

Fuel.—Oil from Talara is used.

Signaling equipment.—Hand signals are used.

Maintenance.—The road is in excellent condition.

Bridges and tunnels.—There are no bridges or tunnels on the road.

The motive power and rolling stock of the road for the calendar year ended December 31, 1925, included 10 locomotives (10 tons each, cylinders 6 by 10 inches), 2 passenger cars, and 50 cane cars.

There is one repair shop at Hacienda Chucarapi.

LA ENSENADA-PAMPA BLANCA RAILWAY

The concession for the construction of the Ensenada-Pampa Blanca Railway was granted in 1905 and the road was opened to traffic June 5, 1906. The road is owned by Victor F. Lira, who is the owner of a sugar plantation at Pampa Blanca. It runs from La Ensenada, a station on the Southern Railway, to the sugar establishment, a distance of 20 kilometers.

Inasmuch as the road is privately owned and operated, no financial information is available. It carries principally freight in the form of cotton and olives.

Victor F. Lira, owner and manager of the road, is located at Arequipa, and makes all purchases.

Gauge.—The gauge of the road is 0.75 meter.
Grades.—The maximum grade of the road is one of 1½ per cent.
Rails.—Rails weighing 12 kilos per meter are used.
Fuel.—Coal and firewood are used as fuel.

The motive power and rolling stock for the calendar year 1925 were as follows:

4 Koppel locomotives, weighing 12,000 kilos each.
32 freight cars, weighing 1,000 kilos each.
1 first-class passenger car (capacity 40).
1 second-class passenger car (capacity 40).

VANADIUM CORPORATION OF AMERICA RAILWAY

This railroad extends from Minas Ragras to Jumasha, on Lake Pun-Run, and also from Casa Lagunas to Ricran, a station on the Cerro de Pasco Railway. The company has 25 kilometers of track in operation. The last section of this road was constructed in 1924.

Inasmuch as the road is privately owned and operated, no financial information on this road is available. During 1924 the lines carried approximately 5,400 tons of vanadium ore.

The operating officials of the road are: Manager, Charles F. Fritz, Abelardo, Peru; assistant manager, Alvarez Calderon, Abelardo, Peru.

Purchases are made directly, generally through the New York office. The company has offices at Minas Ragras, Peru; the Lima office is at Bodegones 380, and the New York address is "Vanadium Corporation of America."

Altitude.—The road runs practically level, about 1,400 feet above sea level
Gauge.—The gauge is 0.91 meter.
Grades.—The maximum grade is one of 3 per cent.
Curves.—There are practically no curves on the road.
Ballast.—Gravel is used as ballast.
Ties.—Ties of roble pellin, eucalyptus, and redwood, secured locally, in Chile, and in the United States, 8 feet by 8 by 6 inches, spaced on 0.70-meter centers, are used.
Rails.—Rails weighing 40 pounds to the meter are used.
Water.—Water is obtained from Lake Pun-Run. Water stations are about 9½ kilometers apart.

Fuel.—Coal obtained locally is used as fuel. There is one fuel station, located at Ricran. At the present time no change in fuel is contemplated.

Signaling equipment.—There is no signaling equipment in use.

Maintenance.—The road is in sufficiently good condition to withstand the traffic it is required to carry.

Bridges.—There is one bridge 250 feet in length, constructed of wood and stone pillars, over the Rio Blanco.

Tunnels.—There are no tunnels on the road.

For the year ended December 31, 1925, the road had 5 locomotives, 0–4–0 saddle tank, cylinders 6 by 10 inches, weighing 10 tons each, and 15 platform cars.

Link-and-pin couplers are used.

There is one repair shop at Ricran.

TAMBO DE MORA-CHINCHA ALTA RAILWAY

A concession in perpetuity for this railway was granted to Don E. J. Prew on March 4, 1897. The Government was to receive 5 per cent of the annual net receipts. The road was transferred to Don F. Amaton September 10, 1897, and by him to the Empresa del Muelle y Ferrocarril de Tambo de Mora a Chincha Alta on July 9, 1898. It was opened to traffic on October 13, 1898. Because of damage by floods and the small amount of traffic, the Government has released the road from paying rental from April 30, 1904.

A concession for the branch from Tambo de Mora to the Fernaldo Nagaro Timber Works was granted on January 19, 1900. Under a concession authorized on October 19, 1917, this road was opened to Chincha on July 11, 1924.

At the present time the main line is 12 kilometers in length, extending from the port of Tambo de Mora to Chincha Alta. In addition, there are also two branches—one to Chincha Baja, a distance of 2 kilometers, and one to Pirpa, 1 kilometer in length.

During 1924 the road had a total revenue of Lp.11,401. During the same year it carried 20,566 tons of freight, mostly cotton and wine, and 94,864 passengers.

The operating officials of the road for the calendar year 1925 were as follows (the address in each case being Tambo de Mora, Peru):

President, Cesar A. Coloma.
Vice president, Carlos Arana Santamaria.
Directors:
    Carlos G. de Menchaca.
    Juan Bardelli.
    Ismael Bielich.
    Roberto J. Busallen.
    Manuel E. Morales.
Manager, Cesar Bernales Lastannau.

Purchases are made direct. Information regarding purchases may be obtained through the manager, Cesar Bernales Lastannau, care of the road at Tambo de Mora.

Gauge.—The gauge of the road is one of 3 feet 3⅜ inches.

Grades.—The grade is 2½ per cent.

Curves.—The maximum curve on the road has a radius of 50 meters.

Ballast.—Earth is used for ballast.

Ties.—Ties of roble pellin, secured locally, 6 feet by 6 by 6 inches, spaced 50 centimeters on centers, are used.

Rails.—Rails weighing 50 pounds to the yard, in 30-foot sections, are used.

Water.—Water is obtained from wells about 1 kilometer from Tambo de Mora and Chincha and stored in iron tanks at Sunampe.

Fuel.—Oil obtained from Talara is used as fuel. There is only one fuel station, located at Tambo de Mora. At the present time no changes in fuel are contemplated.

Signaling equipment.—All signaling is done by hand.

Maintenance.—The road is kept in sufficiently good condition to withstand the traffic it is designed to carry.

Bridges.—There is one bridge 15 meters in length, constructed of concrete, located at Agua Dulce, a distance of 1 kilometer from Tambo de Mora.

Tunnels.—There are no tunnels on the road.

The motive power and rolling stock for the calendar year 1925 were as follows:

Locomotives:
- 2 Baldwin, 1 of 34,900 pounds with cylinder 10 by 16 inches; 1 of 22,000 pounds with cylinder 8 by 14 inches; wheel arrangement, 0-4-0.
- 2 Rogers, 1 of 15 and 1 of 16 tons.
- 1 Orenstein & Koppel, of 39,300 pounds, with cylinder 11 by 16 inches; wheel arrangement, 2-4-0.

Cars:
- 33 gondola freight cars, capacity 10 tons.
- 5 passenger coaches, as follows—
  - 2 mixed first and second.
  - 2 first class.
  - 1 second class.
- 1 baggage car.

Link-and-pin couplers are used at an elevation of 2 feet 7 inches from top of rail.

There is one repair shop, located at Chincha, which employs 10 men. The shop can handle castings up to 1 ton.

PARAMONGA RAILWAY

A concession for the Paramonga Railway, including the right to build a bridge across the Rio Pativilca, was granted to the Soc. Agricola Paramonga (Ltd.) on October 11, 1901. The road was opened to traffic in 1903. At the present time the road is 7.5 kilometers in length.

The operating officials of the road at the present time are:

Valentin Quezada, administrator, Paramonga.
Soc. Agricola Paramonga (Ltda.), Villalta 273, Lima, Peru, managers.

Purchases for the road are made through local representatives of foreign manufacturers.

Inasmuch as the road is privately owned and operated, no financial information is available. The road carries no passengers, and its traffic is made up mostly of sugar cane.

Altitude.—The road runs from sea level to an altitude of 6 meters, which is the highest point.

Gauge.—The gauge of the road is 3 feet 6 inches.

Grades.—The maximum grade is one of 2 per cent.

Curves.—The radius of the maximum curve is 60 meters.

Ballast.—Earth is used for ballast.

Ties.—Ties obtained from Chile, Colombia, and the United States, of roble pellin, nato, and redwood, 6 feet by 6 by 6 inches, spaced on 3-foot centers, are used.

Rails.—Rails weighing 30 pounds to the yard, in 30-foot sections, are used.

Water.—Water is obtained by means of pumps from the Pativilca River, along the right of way.

Fuel.—Oil is used for fuel. There is one fuel station, located at Paramonga. There are no plans at the present time to change the motive power.

Signaling equipment.—There is no signaling equipment in use.

Maintenance.—The roadbed and track are in sufficiently good repair to withstand the traffic they were designed to carry.

Bridges.—There are several bridges along the road. The longest bridge is 20 meters, while several are of 15 and 10 meters.

Tunnels.—There are no tunnels on the road.

The motive power and rolling stock for the calendar year 1925 were as follows:

Locomotives:
- 1, wheel arrangement 2–6–0; size of cylinders 15 by 20 inches; weight 36½ tons.
- 2, wheel arrangement 0–6–0; cylinders 9 by 14 inches; weight 12 tons.
- 1, wheel arrangement 0–6–0; cylinders 11 by 16 inches; weight 18½ tons.

Rolling stock: 125 cane cars of 12 tons capacity and 40 cane cars of 5 tons capacity. The latter have automatic couplers; all others have link and pin.

There is one repair shop, located at Paramonga, which employs 10 men. The shop can handle castings of 1 ton and is equipped with various kinds of power-driven machinery and tools.

TALARA OIL FIELD LINES

The International Petroleum Co. has laid approximately 100 miles of narrow-gauge tracks in the vicinity of Talara. The lines were built without concession and are used exclusively by the company. At the present time they comprise the following lines, but additional mileage is being laid as required:

	Miles
Talara to Negritos (via tunnel)	6.25
Incline to Talara	1.62
Negritos to Lagunitas	5.00
Lagunitas-Belen-Portachuelo	7.75
Negritos to La Brea	16.50
Mile 10 (Negritos-La Brea) to Mogollon	9.50
Mile 7 (Negritos-La Brea) to Parinas	4.00
La Brea to Belen	12.00
Miscellaneous field connections	40.00
Total	102.62

Inasmuch as the road is independently owned and is operated only in connection with the company's oil fields, no financial or traffic information is available. It may be stated, however, that the principal freight carried is oil products outward and various construction materials inward.

Purchases for the road are made direct, on the recommendation of F. W. Townsend, chief engineer, Talara.

The following information on the right of way pertains to the so-called main line, which consists of approximately 45 miles of line between Talara and Lagunitas, including various side lines.

Gauge.—The gauge of the road is 2 feet 6 inches throughout.

Grades.—The maximum grade on the road is 2½ per cent, extending for a distance of 2,000 feet between the tunnel and Negritos on the Negritos-to-La Brea section. This grade prevails for a distance of 1½ miles. Of course, this does not include the incline which is located about a mile from Talara and connects with Negritos; this was used before the tunnel was opened and has a 15 per cent grade. This section, consisting of double track, was formerly operated by means of a rope hoist and is kept in repair at the present time in the event that any emergency might close the tunnel.

Curves.—The maximum curve on the road is one of 24 degrees, located in the Talara-to-Negritos and the Negritos-to-La Brea sections.

Ballast.—The road is well ballasted throughout with sand.

Rails.—Rails weighing 30 pounds, in 30-foot sections, are used.

Fuel.—Oil obtained from the Talara oil fields is used as fuel. At the present time there are no plans for any change in fuel.

Maintenance.—The roadbed is kept in sufficiently good repair to withstand the traffic it is required to bear.

Clearance.—Clearance on the road is limited to the dimension of the tunnel; for the first 120 feet this has a height of 10 feet from top of rail, and the remaining distance is constructed at a height of 13 feet from top of rail; the width is 8 feet throughout.

Bridges.—There are no bridges on the road.

Tunnels.—There is one 12,000-foot tunnel on the Talara-to-Negritos line.

The motive power and rolling stock of the road for the calendar year 1925 were as follows:

Locomotives:
    Bell (geared drive), 0–4–0, with four-wheel tender, about 8 tons.
    1 Kerr Stuart, England, outside frame, 0–4–2, side tank, about 10 tons.
    1 Kerr Stuart, England, inside frame, 0–4–0, side tank, about 5 tons.
    1 Hunslet, England, inside frame, 0–4–2, side tank, about 10 tons.
    1 Hunslet, England, inside frame, 0–4–2, side tank, about 10 tons.
    1 Baldwin, 16 tons.
    1 Baldwin, 6–11⅓ C58, inside frame, 0–4–2, side tank, about 16 tons.
    1 Baldwin, 6–11⅓ C60, inside frame, 0–4–2, side tank, about 17 tons.
    1 Baldwin, 6–11⅓ C61, inside frame, 0–4–2, side tank, about 17 tons.
Rolling stock:
    34 motor rail cars (converted auto trucks).
    39 motor road cars (running on roadbed by straddling the tracks).
    16 rail tractors.
    119 10-ton freight cars, 22 by 6 feet.
    5 inclosed 3-ton steel cars.

There are two repair shops, one located at Talara and the other at Negritos.

CERRO DE PASCO RAILWAY

The Cerro de Pasco Railway is built entirely on the Andean Plateau, at a height of more than 12,000 feet above sea level. The route from the Cerro de Pasco mines to La Oroya follows the line of the proposed Pan American Railway southward to Puno.

The first concession for such a railroad was applied for in 1898 by the Backus & Johnston Mining Co., of Casapalca. Their application was refused. On May 5, 1899, the Government called for tenders for the construction of this line. On July 5, 1899, the concession was granted to Ernest Thorndyke. On February 10, 1902, Thorndyke transferred his rights to James B. Higgin, acting on behalf of the Cerro de Pasco Railway & Mining Co.

On October 1, 1903, MacCune & Higgin were authorized to run a survey for the proposed railway, one from Oroya or any other suitable point on the Peruvian Central Railway to a navigable point on the Rio Ucayali or its tributaries; the other from kilometer 121 on the Central Railway to the coal mines in the vicinity of Goyllarisquisga, a distance of 27 miles. The main line was opened to traffic on January 16, 1904, while the branch was opened November 15, 1907.

It is proposed to extent this line toward the Ucayali River, making a connection at Puerto Victoria or some other port on this navigable tributary of the Amazon. On various occasions concessions have been granted for the construction of this road, but so far practically nothing has been done other than surveying for possible routes.

At the present time the road has 132.4 kilometers of main-line track in operation and two branches, one from Vista Alegre to Goyllarisquisga, a distance of 42 kilometers, and the other from Alacacha to Quishuarcancha, a distance of 58.1 kilometers.

Inasmuch as the road is privately operated in connection with the Cerro de Pasco Railway, it is not possible to obtain figures as to its revenue. During 1924 the road carried approximately 849,804 tons of freight (most of which was copper) and 124,084 passengers.

The operating official of the company is A. T. Howard, general manager, who should be addressed in care of the road at Cerro de Pasco. Purchases for the road are made directly by Mr. Howard.

Altitude, grades, and curves.—The following table gives data on these points covering the main line and branches:

Stations	Distance, in kilometers	Altitude		Maximum compensated ascending gradient		Maximum curve	Total degrees of curvature	Percentage of curvatures
		Feet	Meters	East-bound	West-bound			
MAIN LINE	*From La Oroya*			*Per cent*	*Per cent*	*Degrees*		
La Oroya		12, 272	3, 740					
Tingo	20. 0	12, 945	3, 946	2. 25	1. 00	16	2, 496	43
La Cima	37. 8	13, 822	4, 213	2. 25		12	1, 259	33
Junin	54. 8	13, 555	4, 131	1. 50	1. 30	2	57	6
Carhuamayo	83. 6	13, 568	4, 135	1. 50	1. 30	8	362	10
Kilometer 110	110. 0	13, 692	4, 173	1. 50	1. 30	10	335	18
La Fundicion	118. 5	14, 012	4, 270	1. 50		12	705	40
Vista Alegre	123. 4	14, 199	4, 328	1. 50	. 35	12	911	51
Cerro de Pasco	132. 4	14, 208	4, 330	. 13	. 35	12	1, 216	47
Total						16	7, 341	31
GOYLLARISQUISGA BRANCH	*From Vista Alegre*							
Vista Alegre		14, 199	4, 328					
Yurahunca		13, 806	4, 208		1. 60	16	1, 476	39
Paria	15. 54	13, 845	4, 220	. 49	. 40	8	160	13
Alcacocha	23. 37	14, 385	4, 383	2. 50		16	1, 106	35
Tusi	31. 79	13, 875	4, 229		2. 50	16	1, 487	41
"Saddle"	38. 36	13, 676	4, 168	1. 00	1. 60	24	1, 537	49
Goyllarisquisga Wye	40. 62	13, 787	4, 202	2. 50		16	221	29
Goyllarisquisga Station	42. 00	13, 720	4, 181		2. 50	20	298	45
Total						24	6, 285	36
QUISHUARCANCHA BRANCH	*From Alcacocha*							
Alcacocha		14, 380	4, 383					
East end "Y"	10. 3	14, 320	4, 365	2. 85	2. 53	21	2, 080	46
Coal bins Q	16. 1	13, 810	4, 209	5. 00	5. 00	27	1, 968	78
Total						27	4, 048	62

Rails.—Rails weighing 90 pounds per yard, in 32-foot sections, are used.

Ties.—Ties of redwood and eucalyptus, obtained from the United States and locally, 6 feet by 6 by 8 inches, spaced 70 centimeters on centers, are used.

Water.—Water is obtained from streams along the right of way. The following table will indicate the various water stations, together with the capacity of tanks:

Kilometer	Station	Tank	Capacity	Length of line	Size of line
			Gallons		*Inches*
0	Oroya	Wooden	50,000	7,800	3
11	Zig-Zag	Iron	10,000	850	2
31	Tilarnioc	do	10,000	2,600	2
51	Chacamarca	do	10,000	1,700	2
84	Carhuamayo	do	10,000	2,500	2
111	Unish	do	10,000	3,900	2
128	Champa reservoir (open ditch)				
G-6	do				
G-14	Vischuscancha	Wooden	50,000	8,220	2
G-34	Tusi	do	50,000	500	2
Q-16	Quishuarcancha (mining company)	Iron	[1] 10,000		2

[1] Also standpipe at smelter for emergency use.

Ballast.—The road is ballasted with gravel and broken rock.

Fuel.—Coal, oil, and firewood are used as fuel. Coal is obtained at Goyllarisquisga and oil at Talara, while wood is secured locally. There are no plans at the present time for electrification or other change in fuel.

Signaling equipment.—Hand signals are used.

Maintenance.—All parts of the roadbed are kept in sufficiently good repair to accommodate as heavy traffic as they were designed to carry.

Bridges.—Forty-six bridges have been constructed on the road, varying in length from 10 to 249 feet.

Tunnels.—There are no tunnels on the road.

The rolling stock used on the road during the year ended December 31, 1925, was entirely of American origin, as follows:

Types	Builder	Date built	Shop number	Road number	Size of cylinders	Weight		
						On drivers	Total engine	Tender
					Inches	*Pounds*	*Pounds*	*Pounds*
Consolidation, 2-8-0.	American Locomotive Co., Rhode Island works.	Dec., 1902	27,625	99	20 by 24	113,500	128,000	102,500
Do	do	do	27,626	9	20 by 24	113,500	128,000	102,500
Mogul, 2-6-0	do	June, 1903	28,308	50	18½ by 28	112,000	130,000	102,500
Do	do	do	28,309	51	18½ by 28	112,000	130,000	102,500
Do	do	do	28,310	52	18½ by 28	112,000	130,000	102,500
Do	do	do	28,311	53	18½ by 28	112,000	130,000	102,500
Ten-wheel, 4-6-0	American Locomotive Co., Rogers works.	Jan., 1907	41,513	20	19 by 26	108,000	140,000	84,000
Mikado, 2-8-2	Baldwin Locomotive Works.	Feb., 1907	30,078	10	20 by 26	122,000	156,000	100,000
Do	do	do	30,125	11	20 by 26	122,000	156,000	100,000
Do	do	Nov., 1907	32,270	12	20 by 26	122,000	156,000	100,000
Do	do	Dec., 1907	32,271	14	20 by 26	122,000	156,000	100,000
Do	do	Jan., 1913	39,122	40	20 by 22	125,000	157,000	100,000
Do	do	do	39,123	41	20 by 22	125,000	157,000	100,000
Saddle tank, 0-4-0.	do	Mar., 1908	32,720	200	16 by 24	85,000	85,000	(1)
Do	do	do	32,721	201	16 by 24	85,000	85,000	(1)

[1] Tank engine.

Passenger and freight cars on hand as of January 1, 1925, were as follows:

Passenger coaches	6
Private cars	3
Cabooses	3
Flats	60
Oil tanks	2
Coal	103
Ore	119
Box	28
Coke racks	12
Wrecking	2
Total cars	338

There are two repair shops, located at Oroya and Cerro de Pasco.

CERRO AZUL-SAN VICENTE RAILWAY

This road, one of the oldest in Peru, dates its history from 1866, when a concession for its construction was granted to Don D. Crosby. This concession was annulled in 1867, when only 10 kilometers of road had been constructed. On April 13, 1870, another concession was granted to J. M. Montero, valid for 99 years. Under this concession the remaining 6 kilometers were constructed and the line was opened to traffic. At the present time the line is owned and operated by the Sociedad Agricola de Santa Barbara (Ltd.), a private organization.

At the present time it has the following track in operation:

	Kilometers
Main line:	
Cerro Azul to Santa Barbara	6
Santa Barbara to San Vicente	10
Total	26
Branches:	
Hacienda Casa Blanca branch	6
Hacienda La Quebrada branch	8
Connecting branches	5
Total	19
Total mileage	35

No extensions are being considered.

Purchases for the road are made by the manager, George Chinge, who should be addressed in care of the company at Canete.

The gauge of the line is 0.914 meter. The maximum grade does not exceed 1 per cent. Rails weighing from 18 to 20 pounds to the yard are used.

The motive power and rolling stock on the road for the year ended December 31, 1923, consisted of 5 locomotives and 30 cars.

CERRO AZUL-TO-CANETE RAILWAY

The history of this road dates from 1872, when it was completed by Juan Miguel Montero y Rozas with his own capital. At the present time the road is owned by the Testamenteria Justo Barnechea, Espaderos 225, Lima. The road is operated in connection with the plantations, and the principal freight carried is cotton and sugar. At the present time the road is 10 kilometers in length and practically parallels the other railway extending between Cerro Azul and Canete.

Purchases for the road are made by Luis Alvizuri, Espaderos 225, Lima.

Altitude.—The road runs on a level, with practically no elevation.

Gauge.—The gauge of the road is 0.91 meter.

Grades.—The maximum grade of the road is 1 per cent.

Curves.—The radius of the maximum curve is 40 meters.

Ballast.—Earth and broken stone are used for ballast.

Ties.—Ties are of roble pellin, obtained from Chile, 6 feet by 8 by 4 inches, spaced from 50 to 60 centimeters on centers.

Rails.—Rails weighing 18 to 20 pounds, in 24-foot sections, are used.

Water.—Water is obtained from streams along the right of way and stored in tanks. There is one water station, at Cerro Azul.

Fuel.—Coal obtained from England is used as fuel. There is one fuel station, at Cerro Azul. At the present time there are no plans for a change in fuel.

Signaling.—Hand signals are used.

Maintenance.—The road is in sufficiently good condition to withstand the traffic it was designed to carry.

Bridges.—There are six wooden bridges on the road.

Tunnels.—There are no tunnels on the road.

The motive power and rolling stock for the calendar year 1925 comprised 3 old English and 2 Koppel locomotives and 93 freight cars.

There is one repair shop, located at Santa Barbara.

VITOR-SOTILLO RAILWAY

This road was constructed in 1899 by the Government and extends from Vitor, a station on the main line of the Southern Railway, to Sotillo, a distance of 12 kilometers. The line was operated by the Peruvian Corporation (Ltd.) up till 1923, when it was taken over by the Government. Plans that had been formed to extend the road from Sotillo to Majes, a distance of 110 kilometers from Vitor, have been abandoned for the present.

For the calendar year 1925 the passenger revenue of the road amounted to Lp.315 and the freight revenue to Lp.1,564. The road showed a profit of Lp.439. During this period the road carried 3,150 passengers and 2,232 tons of miscellaneous commodities, chiefly sugar, wines, liquors, animals, wool, etc.

At the present time the road is operated under the direction of Jesus Chacon S., who should be addressed in care of Ferrocarril de Vitor a Sotillo, Peru. Purchases are made directly by the administrator.

Altitude.—The road runs from 1,350 to 1,550 meters, which is the highest point.

Gauge.—The gauge of the road is 1.44 meters.

Grades.—The maximum grade is one of 4.20 per cent.

Curves.—The minimum curve radius is 50 meters.

Ballast.—Gravel and dirt are used for ballast.

Ties.—Ties of hardwood, 6 by 8 inches by 6 feet, spaced on 3-foot centers, are used.

Rails.—Rails weighing 30 pounds to the yard, in 32-foot sections, are used.

Water.—There is one water station on the road, located at Ramal, a distance of 3 kilometers from Vitor.

Fuel.—Gasoline obtained from Mollendo is used for fuel. There are no plans for any change in fuel at the present time.

Signaling.—Flags are used for signaling.

Maintenance.—All parts of the roadbed and track are kept in good condition.

Bridges.—There is one bridge, located at Sotillo, over the Vitor River.

Tunnels.—There are no tunnels on the road.

The rolling stock as of May 1, 1926, comprised three rail motor cars.

There is one repair shop, located at Ramal.

CARTAVIO SUGAR CO. RAILWAY

This road was constructed and opened to traffic in 1906. It extends a distance of 10 kilometers from Cartavio to Chiclin. The road is operated solely in the interests of the plantation owned by W. R. Grace & Co.

Purchases are made through the office of W. R. Grace & Co., at Trujillo.

Altitude.—The road runs from sea level to 250 feet, which is the highest point on the road.

Gauge.—The gauge of the road is 0.91 meter.

Grades.—The maximum grade of the road is 2 per cent

Curves.—The radius of the sharpest curve is 120 meters.

Ballast.—Gravel is used for ballast.

Ties.—Ties of California redwood, 6 by 8 inches by 6 feet, spaced on 2-foot centers, are used.

Rails.—Rails weighing 30 pounds to the yard, in 24-foot sections, are used.

Water.—Water is secured at Cartavio.

Fuel.—Wood and coal are used for fuel. One fuel station is located at Cartavio. At the present time no plans have been made for any change in fuel.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate the traffic they are required to bear.

Bridges.—There are no bridges on the road.

Tunnels.—There are no tunnels on the road.

The motive power as of January 1, 1926, comprised seven locomotives, three of which are of Baldwin manufacture. A description of these three follows:

0–4–0; cylinders 9 by 12 inches; 10 tons capacity; two of this type.
0–4–0; cylinders 10 by 14 inches; 15 tons capacity.

There are 200 cane cars, in addition to a few special cars, the number of which is not known.

Link-and-pin couplers, 23 inches from top of rail, are used.

There is one repair shop, which is the workshop of the sugar mill. This shop can make minor repairs.

SUMMARY OF PROPOSED RAILWAYS

The following is a list of proposed roads; construction on some of these is under way, while others are still in the concession state:

Cerro Azul-to-Huancayo Railway.
Lima-to-La Punta Railway.
Sullana-Morropon Railway.
Dunsmuir concession.
Huallaga concession.
Morropon-Sechura Bay Railway.
Huancayo-to-Negro Bueno Railway.
Pacutea Railway.

Brief descriptions of these lines are presented in the succeeding pages.

CERRO AZUL-TO-HUANCAYO RAILWAY (PROPOSED)

A bill was introduced in the Peruvian Congress in July, 1925, authorizing the construction of a railroad from Cerro Azul tc Huancayo. Huancayo is situated on the Central Railway of Peru, and Cerro Azul is a port a few miles south of Lima. The road would consequently parallel the existing Central Railway. The construction cost would be extremely high, inasmuch as it would be necessary to build a road at an altitude of 16,000 feet through very difficult mountain country. A translation of the bill is as follows:

ARTICLE 1. The executive power is authorized to order the planning and construction of a railway which, starting at the port of Cerro Azul, will terminate in the city of Huancayo.

ART. 2. The executive power is authorized to expend the sum necessary for the realization of the said work from the railway fund, created by special law (law pledging profits of tobacco monopoly to railway construction).

ART. 3. There is declared the right of the Government to expropriate as a public utility the lands necessary for the fulfillment of this law.

LIMA-TO-LA PUNTA RAILWAY (PROPOSED)

On January 30, 1920, the Government granted a concession to Alfredo M. Solar, valid for 60 years, for the construction of a railway from Lima to the bathing resort of La Punta, near Callao, a distance of 20 kilometers. The original concession proposed to run an electric railway of the Edison storage-battery type. On May 28, 1921, the Peruvian Government modified certain terms of the final agreement. The road is to be built of single-track line, with sidings, and was to be completed within 18 months after the date of the resolution above mentioned.

SULLANA-MORROPON RAILWAY (PROPOSED)

The concession for the construction of this road was granted to Carlos Guislain (a Belgian) on October 5, 1923. The road was to be of standard gauge and to run from the town of Sullana to Morropon. The following conditions were prescribed for its construction:

1. The concessionnaire will study on his own account and will present to the Government for its approval within six months, beginning from to-day, the definitive studies for a 1.44-meter-gauge railway line starting from the village of Sullana and ending at Morropon; the above-mentioned studies must be effected in accordance with the public-work regulations.
2. The concessionnaire will construct the railway with his own capital and will begin the work within 90 days after the approval of the studies; it must be completed within a period of 18 months, beginning from the same date.
3. The Government will grant free of charge to the concessionnaire all the necessary free lands at the disposition of the State for the construction of the railway and will facilitate the expropriation of private lands in accordance with the corresponding law.
4. The concessionnaire will have the perpetual ownership of the railway.
5. The exploitation of the railway will be subject to the regulations now in force or those to be issued in the future relative to the above-mentioned railway; fixing, as a basis for the tariffs, the ones now in force for the Paita-to-Piura Railway, to be applied when the railway is given over to the public service, and to be examined every five years by the Government and the concessionnaire, in order to introduce the necessary modifications.

6. As a guaranty for the fulfillment of the contract entered into by the applicant, he will deposit in the Caja de Depósitos y Consignaciones the sum of Lp.5,000 in bonds of the internal debt of 7 per cent, to be forfeited by him in favor of the Fiscal Office if the studies are not presented within the stipulated period, or if, once these are approved, the construction of the railway is not finished within the period of 18 months—in either case the concession being annulled.

7. Any controversy which may arise will be directly resolved by the Tribunal of Justice of the Republic, the concessionnaire not being able to make use of any official intervention in the matter.

It will be noted that, according to article 2 of the concession, the work on the construction of this line must be commenced within 90 days after the approval of the studies. This approval was granted by the Government on May 9, 1924. The concessionnaire has been successful in organizing a company known as the Piura Valley Concessions (Ltd.), with offices at 95 Winchester House, E. C., London. According to a report issued in March, 1926, construction of the road was to begin immediately and the entire road opened to traffic by July, 1927.

THE DUNSMUIR CONCESSION (PROPOSED)

The concession granted to Robert Dunsmuir in 1922 was one of the most ambitious in railroad history. It provided for the construction of several thousand miles of railroad, its operation, the administration of the Peruvian tobacco monopoly, cession of land, pipeline rights, harbor construction, etc.

Mr. Dunsmuir first attempted to interest British firms in his concession. Failing in this, he turned to American interests. In the meantime other organizations became interested in the project, and it was rumored at one time that Peruvian capitalists were to take over the concession, and, on another occasion, that an American syndicate was to assume the concession. In May, 1923, the concession was ratified by both houses and signed by the President of Peru.

Mr. Dunsmuir at this stage was supposed to deliver to the Government, according to article 35 of the concession, the sum of £1,245,000. This he failed to do. In accordance with a provision in the same article, the Peruvian Legislature passed the following resolution in January, 1924:

It is resolved: To declare the contract made with Dunsmuir as expired, and the deposit of Lp20,000 nominal made by him in the Caja de Depósitos y Consignaciones, as a guaranty, shall become the property of the Government.

With regard to this matter, the following paragraph may be quoted from "Peru: A Commercial and Industrial Handbook," by Commercial Attaché W. E. Dunn:

While this concession has been canceled because of the inability of the promoter to finance it, a summary of its chief provisions will be pertinent because further negotiations of the kind will doubtless be based in part on this project. The basis of the proposed concession was the Peruvian tobacco monopoly, now administered by the National Tax Collecting Co. (Compañía Recaudadora de Impuestos), the first condition being the repayment of a debt owed by the Government to this company to the amount of Lp.1,245,000. Upon payment of this sum the administration of the tobacco monopoly would be turned over to the concessionaire for 33 years. During the first 15 years all net profits could be applied only to the expenses of railway construction, but during the remainder of the period might be freely used by the concessionaire. Extensive land grants, including oil and mineral rights, were conceded. All lines constructed under the contract should be operated by the concessionaire for 45 years, after which time they were to revert to the Government free of all encumbrance. A minimum of 150 kilometers of track must be constructed each year, and all of the lines must be finished within 15 years—certain ones within 5 years. Severe penalties were imposed for failure to live up to the terms of the contract, and a guaranty of Lp.20,000 was deposited by the concessionaire. This sum was declared forfeited, it being found impossible to interest foreign capitalists in the contract as finally approved by the Peruvian Congress.

MORROPON-SECHURA BAY RAILWAY (PROPOSED)

On May 23, 1924, a concession was granted to Pedro Martinto and others for the construction of a line to run from Morropon to one of the ports on Sechura Bay. The concession also authorized the construction of a wharf on Sechura Bay. The concessionaires were granted six months from the date of the concession to submit, for Government approval, a study for the construction of the railroad. In addition they were required to deposit with the Caja de Depósitos y Consignaciones, as a guaranty of the execution of the aforementioned studies, the sum of £200, which was to be forfeited to the Government if the studies were not submitted within the required period. As of December 31, 1925, no report had yet been submitted, so it is presumed that the concession is forfeited.

HUANCAYO-TO-NEGRO BUENO RAILWAY (PROPOSED)

A concession was recently granted to Manuel V. Cabaldoni to construct with his own capital a railway having a gauge of either 3 feet or 4 feet 3½ inches between Huancayo and Negro Bueno, crossing the coal region of Jatunhuasi—a distance of approximately 50 miles. The terms of the concession provided that this railway should be constructed in accordance with the conditions prescribed by the department of public works for railways of the gauge decided upon. It was further provided that the concessionaire should deliver to the Minister of Fomento, within three months, a plan, indicating the route and gauge adopted. This plan required the approval of the Government. The concessionaire was obliged to deposit in the Caja de Depósitos y Consignaciones £500, which was to be forfeited if he did not present the plan referred to within the time provided. The work of construction was to commence within three months following the delivery of this plan, and the line was to be finished before the expiration of two years and three months after such delivery. Inasmuch as the time stipulated has elapsed and no action had been taken, it is presumed that the concession has been forfeited.

PACHITEA RAILWAY (UNDER CONSTRUCTION)

The history of the Pachitea Railway dates back to 1907, when a concession was granted to an American company headed by a man named MacCune. Preliminary surveys were made, but the concession lapsed in 1912. In 1916 the Government undertook the construction of a cart road, 20 kilometers of which was constructed. In 1919 it was decided to convert the road project into a railway. The line was to start at Tambo de Sol, a station at kilometer 92 of the Cerro de Pasco Railway, and extend northeastward. At the end of 1923 approximately 60 kilometers of 1.91-meter-gauge track had been laid. The line crosses the eastern cordillera at kilometer 20, and a most difficult section is encountered for a distance of about 75 kilometers, necessitating the use of switchbacks and maximum gradients of 3½ per cent. At kilometer 85 the barren hill country is left behind and the mountain section is entered. Here the route turns to the north and, after crossing a range at kilometer 130, continues to the valleys of the Huancabamba, Pozuzo, Palcazu, and Pachitea Rivers, passing near the Oxapampa and Pozuzo colonies. From Pozuzo (kilometer 235) the railway will follow the upper Pachitea River to the junction of the Sungaroyacu River, 335 kilometers from Tambo de Sol. An ultimate extension is also planned to Pucalpa, on the Ucayali, which would make the total length of the line about 400 kilometers. Much of the country traversed is rich in timber and forest products, and there are also extensive areas of good farming land in the valleys. The sparse population will make it impossible for the line to be profitable for many years to come, and it is not likely that the ultimate destinations will be reached during the present generation. The total amount expended up to July 1, 1923, reached Lp.247,206.

The Peruvian Government has set aside Lp.3,000 monthly for the building of this road. A sawmill is being erected, and railroad ties, for which a large demand exists, can be delivered at the Oroya-Cerro de Pasco Railway at reasonable cost. All of the railway construction is being carried out by the Peruvian Government and by Peruvian engineers. At the present time all purchases are being made by the engineers constructing the road (with the approval of the Peruvian Government), who should be addressed in care of the road at Supe.

THE HUALLAGA CONCESSION (PROPOSED)

On May 10, 1923, the Government granted a concession to Bertram T. Lee for the construction of a railway line from the port of Yurimaguas, on the Huallaga River, to a point on the Pacific coast of Peru, between Pacasmayo and Paita. Mr. Lee was the Peruvian representative of the Huallaga Co., which is a subsidiary of the General Syndicate, New York.

The concession provided that the line be run between the above-mentioned points by the most feasible route. Provision is also made for the construction of branch lines along the Maranon and Huallaga River valleys. According to the original concession the contract was to be void if a deposit of Lp.10,000 was not made on or before August 30, 1923. This deposit has not been made, and, according to the terms of the contract, the concession has expired. It is understood that up to the present time it has not been renewed.

According to a report received in March, 1926, Mr. Lee has again revived this project and has had the concession transferred to his name. It is also stated that a guaranty deposit of Lp.10,000 has been made and that as soon as the Minister of Fomento recovers his health the concession will be sent to the Peruvian Congress.

LINES NO LONGER OPERATING

Brief descriptions of the railroads the operation of which has ceased at the present time are given in the succeeding pages. The roads are:

	Kilometers
Chancay-Palpa Railway	25
Casapalca-El Carmen Railway	4
Cailloma Mining Co. Railway	12
Larco Herrea Bros. Railroad Lines	88
Sociedad Nepena Valley Railway	55
Pimentel Railway	13
Vitor Sotillo Railway	12
Boyovar-Reventazon Railway	48
Total	257

CHANCAY-PALPA RAILWAY (NOT OPERATING)

The road from Chancay to the hacienda of Palpa, a distance of 25 kilometers, dates its history from March 24, 1872, when a concession was granted for its construction.

The road was constructed in 1875 and opened to traffic on October 9 of that year. The road is owned by the Empresa Agricola de Palpa and last operated by the Empresa del Ferrocarril y Muelle de Chancay, a subsidiary of the former. At the present time it is idle.

The road is of 1-meter gauge. Maximum gradients are 2½ per cent. Rails average 36 pounds to the yard. For the calendar year 1922 the road had 3 locomotives, 5 passenger cars, 17 freight cars and 1 steamboat. During that year officials of the road were as follows: President, Benjamin Vizquerra, Lima; manager, Manuel E. Odriozola, Chancay; superintendents, Agricola Zuluaga and P. C. Alfaro, Chancay; engineer, Manuel E. Odriozola, Chancay. Purchases for the road were made by the manager, Agricola Zuluaga, who should be addressed in care of the road at Chancay.

CAILLOMA MINING CO. LINE (NOT OPERATING)

This road extends from the company's mines near Cailloma (Arequipa) to its ore plant at San Ignacio, a distance of 12 kilometers. The road is of 0.60-meter gauge. Purchases are made directly by the manager, who should be addressed in care of the company at Cailloma. At the present time the road is not in operation.

LARCO HERRERA BROS. RAILROAD LINES (ABANDONED)

The Larco Herrera Bros. formerly operated approximately 102 kilometers of track in connection with their sugar estates in the Trujillo section. The concession for the main line was granted on May 29, 1897, to connect Huanchaco with Tres Palos, a distance of 34 kilometers. The line was opened to traffic in 1898, and under the terms of the concession will revert free to the Government at the end of 50 years.

On May 29, 1908, a concession in perpetuity was granted for the construction of a branch running from Trujillo to Huanchaco. This branch was opened to service in 1914. The other branch, from Tres Palos to Hacienda Roma, a distance of 54 kilometers, was constructed in 1906. The roads are all of the 0.91-meter gauge.

The maximum gradients do not exceed 2.10 per cent. Rails averaging 30 pounds to the yard are used. Purchases for the road were made directly by the manager, Larco Herrera, who should be addressed in care of the road at Trujillo. It is understood that this track was entirely removed during 1925.

SOCIEDAD NEPENA RAILWAY (NOT OPERATING)

This 1.06-meter-gauge road runs from Samanco to Coscachi, a distance of 45 kilometers, with a branch of 10 kilometers extending to San Gregorio hacienda. The road is owned by the Sociedad Agricola Nepena. Purchases for the road are made by the manager, who should be addressed in care of the company in Samanco. During March, 1925, it was practically destroyed by floods. Whether it will be reconstructed is a matter of conjecture.

PIMENTEL RAILWAY (NOT OPERATING)

The history of the Pimentel Railway goes back to February 7, 1867, when a concession for its construction was asked of the Government by Don F. Masias and Don J. Cossio. The road was to connect the chief town of the Department of Lambayeque with the nearest port, Pimentel. At the same time other promoters were interested in the construction of a line connecting this port with Eten. The difficulty was smoothed out, and on July 3, 1867, a concession was granted authorizing the construction of a line from Pimentel to Lambayeque. No construction was undertaken under this concession, however, and on March 22, 1872, an additional concession was granted authorizing the same construction as was originally provided for.

Under this concession the road was constructed as far as Chiclayo on December 23, 1873. The line to Lambayeque was constructed by the Eten Railway in 1875. The road was transferred to the Compañía de Ferrocarril y Muelle de Pimentel and has since been operated by them. At the present time it is proposed to construct a branch from a point on this road to the Province of Hualgoyoc. On December 31, 1922, the road had 13 kilometers of track in operation between Pimentel and Chiclayo. At the present time it is not in operation. The operating officials of the road for the calendar year 1922 were as follows:

President, Hermann O. Gorbitz.
Directors: Aurelio R. Montenegro.
Augusto de la Piedra.
Nicolas Cuglievan.
Guillermo Russo Fry.
Ricardo C. de la Piedra.
Manager, Señor Klinge.

Purchases for the road are made by the manager, who should be addressed in care of the road at Pimentel.

The gauge is 0.914 meter. The maximum grades do not exceed 2 per cent. Rails weighing 34 pounds to the yard are used. The motive power and rolling stock of the road for the calendar year 1922 comprised: Locomotives, 5; passenger cars, 9; freight cars, 50; tanks, 1; motor cars, 2.

BAYOVAR-REVENTAZON RAILWAY (NOT OPERATING)

The Bayovar-Reventazon Railway dates its history back to April, 1899, when the owners of the Reventazon sulphur mines applied for permission to construct a railway to the port of Bayovar. On April 12, 1901, this company transferred its right to the Sechura Mining & Industrial Syndicate. The line was constructed in 1906 and extends for 30 miles from the Reventazon sulphur mines to the neighboring seaport of Bayovar. At the present time the road is not in operation because of the closing of the mines. It is thought that the mines will not be operated in the near future.

Purchases for the road are made by the manager, who should be addressed in care of the company at Bayovar.

The gauge of the road is 3.28 feet (1 meter). The maximum gradients do not exceed 1 per cent. Rails weighing 30 pounds to the yard are used.

At the end of the calendar year 1924 the road had 2 locomotives and 24 freight cars.

CASAPALCA-EL CARMEN RAILWAY (NOT OPERATING)

The concession for this road was granted on November 24, 1899. The road was opened to traffic on November 30, 1909. It joins the property of the El Carmen Mining Co. to the station of the Central Railway Co. at Casapalca and was constructed for the purpose of exploiting the mines of the above company and to connect them with the smelter at Casapalca. The Government may acquire the road at any time upon payment of its value. During recent years operations have been suspended in the smelter works and the road has practically ceased to operate. At the present time it has 4 kilometers of track. Its gauge is 0.60 meter. Grades do not exceed 6½ per cent. Rails weigh 18 pounds to the yard. Purchases for the road were made through Backets Johnston, Casapalca.

URUGUAY

GENERAL CHARACTERISTICS

Uruguay has an area of 72,153 square miles and had a population in 1925 of 1,696,000. It is situated between the Uruguay River and the Atlantic Ocean. To the south is the Rio de la Plata (" River Plate "). West of the Uruguay River is Argentina, while to the north is Brazil, from which the Uruguayan Republic is separated by the Cuareim and Yaguaron Rivers and Lake Merim. In the northern part of Uruguay there are hills and low mountains, none of which are over 2,000 feet in height, while the remainder of the country is principally rolling plains with little or no timber. The communication facilities are more highly developed than in most South American countries. There are good waterways, roads, and highways. There are approximately 1,127 kilometers of navigable rivers, the more important ones being the Uruguay and Plata. On the former alone there are 10 ports open to vessels of 14-foot draft as far as the city of Paysandu. From Montevideo, located on the Rio de la Plata, regular steamship services are maintained to practically all parts of the world. In addition, inter-coastal services and daily services to Buenos Aires are in operation. Highways afford approximately 5,000 miles of communication, while 2,913 kilometers of steam and electric railways are in operation. These railroads are as follows:

	Kilometers
Central Uruguay Railway of Montevideo (Ltd.):	
Central & Northeastern Railway (main line)	452
Eastern Extension	504
Western Extension	341
Northern Extension	299
Total	1, 596
Administración de Ferrocarriles y Tranvías del Estado (Government Railway Administration:	
Tranvía del Norte	13
Uruguay Railway	30
State Railway	47
Uruguay Eastern Railway	114
Northern Railway	19
Sayago to La Tablada Railway	4
Total	227
North-Western of Uruguay Railway Co. (Ltd.)	182
Midland Uruguay Railway	514
Northern Uruguay Railway	114
Puerto Sauce to San Juan.	
Pan de Azucar to Piriapolis	14
Compañía Transatlántica de Tranvías Eléctricos	132
Salto Tramway.	
United Electric Tramways of Montevideo (Ltd.)	148
Grand total	2, 927

A description of each one of the roads is taken up in the following pages.

CENTRAL URUGUAY RAILWAY CO. OF MONTEVIDEO (LTD.)

The history of this company dates from December 13, 1876, when it was organized to carry out a concession granted in 1865 for the construction of a railroad from Montevideo to Durazno. The line was partly built by the original company and operated unprofitably for a short time. In 1868 a law was passed authorizing the transfer of the concession to a London organization, through which the concession passed to the above-named company. In 1878 the terms and conditions of the concession were reconstructed. Under the new arrangement the company renounced any claim to a subsidy which was included in the terms of the original concession and the Government on its part gave up its right of option of purchase. At the present time the railway is the property of the company in perpetuity. The company enjoyed, until November, 1917, freedom of taxation, which privilege was rescinded at that time.

The original line runs north from the capital, Montevideo, 127 miles to Durazno. In 1879 the railroad was continued across to Rio Yi by the construction of one of the largest bridges in the country, consisting of forty-one 50-foot spans. In July, 1886, a further extension was completed to Rio Negro, under a concession granted in 1884. This is the northern terminus of the main line and the point at which the Northern Extension Co. begins. This part of the line is 197 miles in length.

In February, 1899, the company leased the Northeastern of Uruguay Railway for 999 years at a yearly rental of £56,000. This line is 78 miles in length and runs from Montevideo to Minas. While this road is operated as part of the main line, it is independent financially. A copy of its revenue account and balance sheet for 1921 (the latest available) will be found with the financial tables. The road was constructed and opened to traffic in July, 1889.

During the same year the Central Uruguay Railway of Montevideo (Ltd.), purchased for £110,000 a line originally known as the Hygeritas Railway, extending for 20 miles from the town of 25 de Agosto to San Jose. This branch line was opened to traffic in 1876 and had a guaranty of 7 per cent on £10,000 per mile. The Central Railway, however, renounced this guaranty in exchange for Government bonds, which have since been disposed of.

In January, 1902, the company leased the Central Uruguay Western Extension Railway from the Government for 60 years. After this time the line reverts to the Government. The company also has working agreements to operate in perpetuity the lines of the Central Uruguay Eastern and Northern Extension Railways.

The company acquired in 1919–20, at an approximate cost of £215,000, the entire issued capital—£1,507,000, 4½ per cent first-mortgage bonds and $15,000,000, since reduced to $1,000,000, common stock—of the Uruguay Railway Co., conferring a controlling interest in the Midland Uruguay Railway, the Midland Uruguay Extension Railway, and the Uruguay Northern Railway companies.

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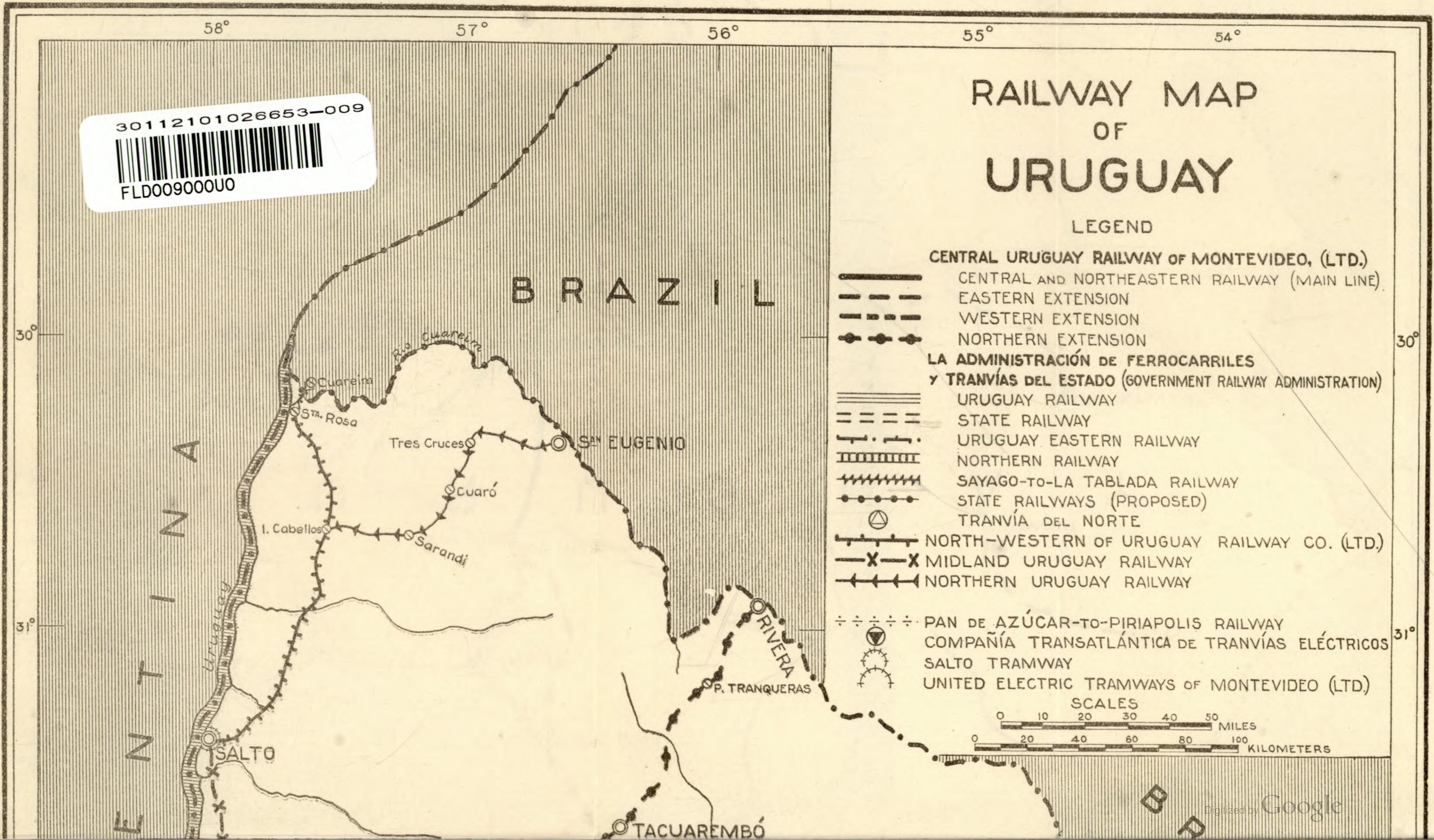
RAILWAY MAP OF URUGUAY
LEGEND
CENTRAL URUGUAY RAILWAY OF MONTEVIDEO, (LTD.)
CENTRAL AND NORTHEASTERN RAILWAY (MAIN LINE)
EASTERN EXTENSION
WESTERN EXTENSION
NORTHERN EXTENSION
LA ADMINISTRACIÓN DE FERROCARRILES Y TRANVÍAS DEL ESTADO (GOVERNMENT RAILWAY ADMINISTRATION)
URUGUAY RAILWAY
STATE RAILWAY
URUGUAY EASTERN RAILWAY
NORTHERN RAILWAY
SAYAGO-TO-LA TABLADA RAILWAY
STATE RAILWAYS (PROPOSED)
TRANVÍA DEL NORTE
NORTH-WESTERN OF URUGUAY RAILWAY CO. (LTD.)
MIDLAND URUGUAY RAILWAY
NORTHERN URUGUAY RAILWAY
PAN DE AZÚCAR-TO-PIRIAPOLIS RAILWAY
COMPAÑÍA TRANSATLÁNTICA DE TRANVÍAS ELÉCTRICOS
SALTO TRAMWAY
UNITED ELECTRIC TRAMWAYS OF MONTEVIDEO (LTD.)
SCALES
0 10 20 30 40 50 MILES
0 20 40 60 80 100 KILOMETERS
58°
57°
56°
55°
54°
30°
31°
BRAZIL
ARGENTINA
Río Cuareim
Uruguay
Cuareim
Sta. Rosa
Tres Cruces
Sn. EUGENIO
Cuaró
I. Cabellos
Sarandi
SALTO
RIVERA
P. TRANQUERAS
TACUAREMBÓ
BR

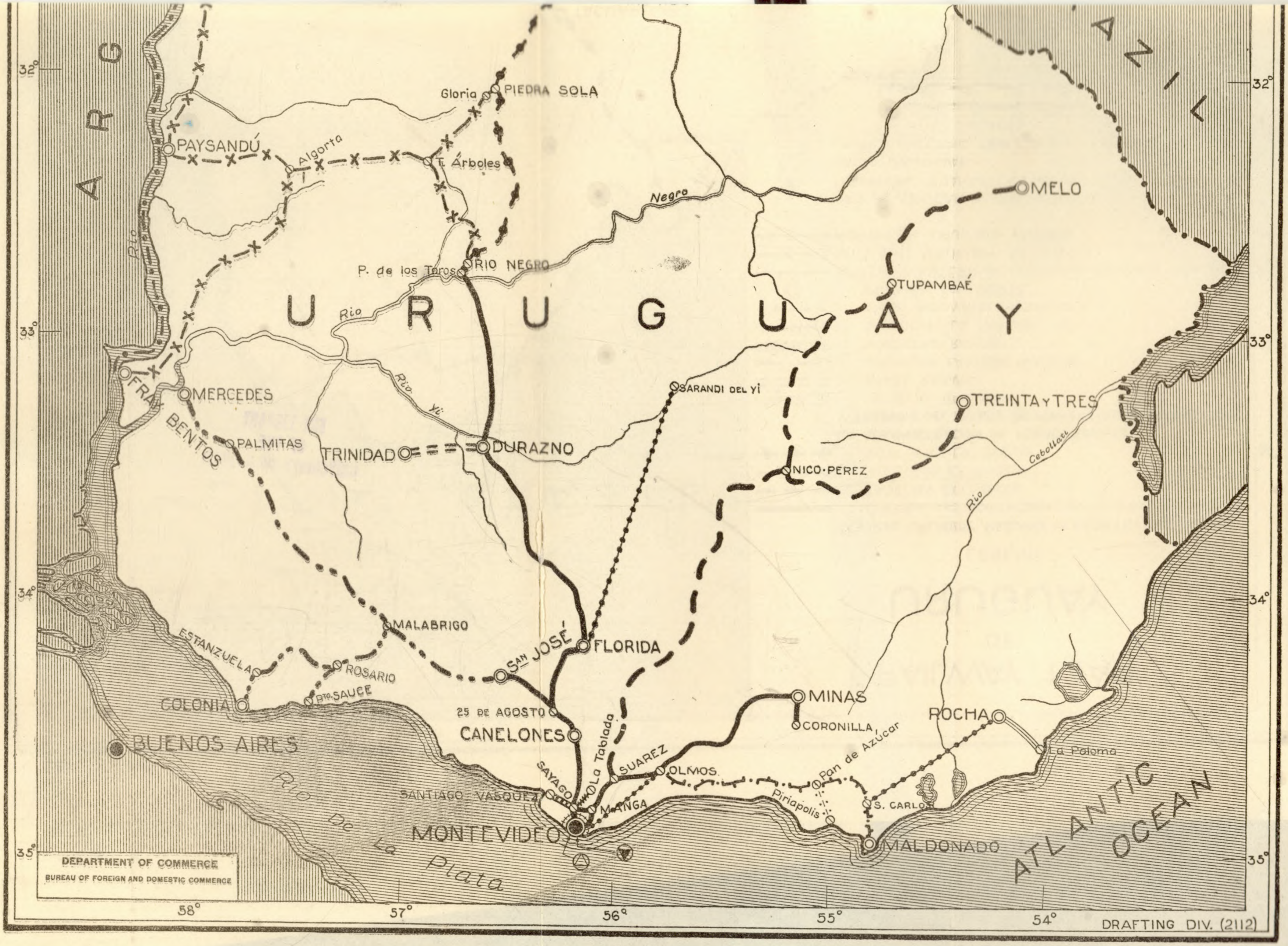

FIG. 13

104289°—27. (Face p. 276.)

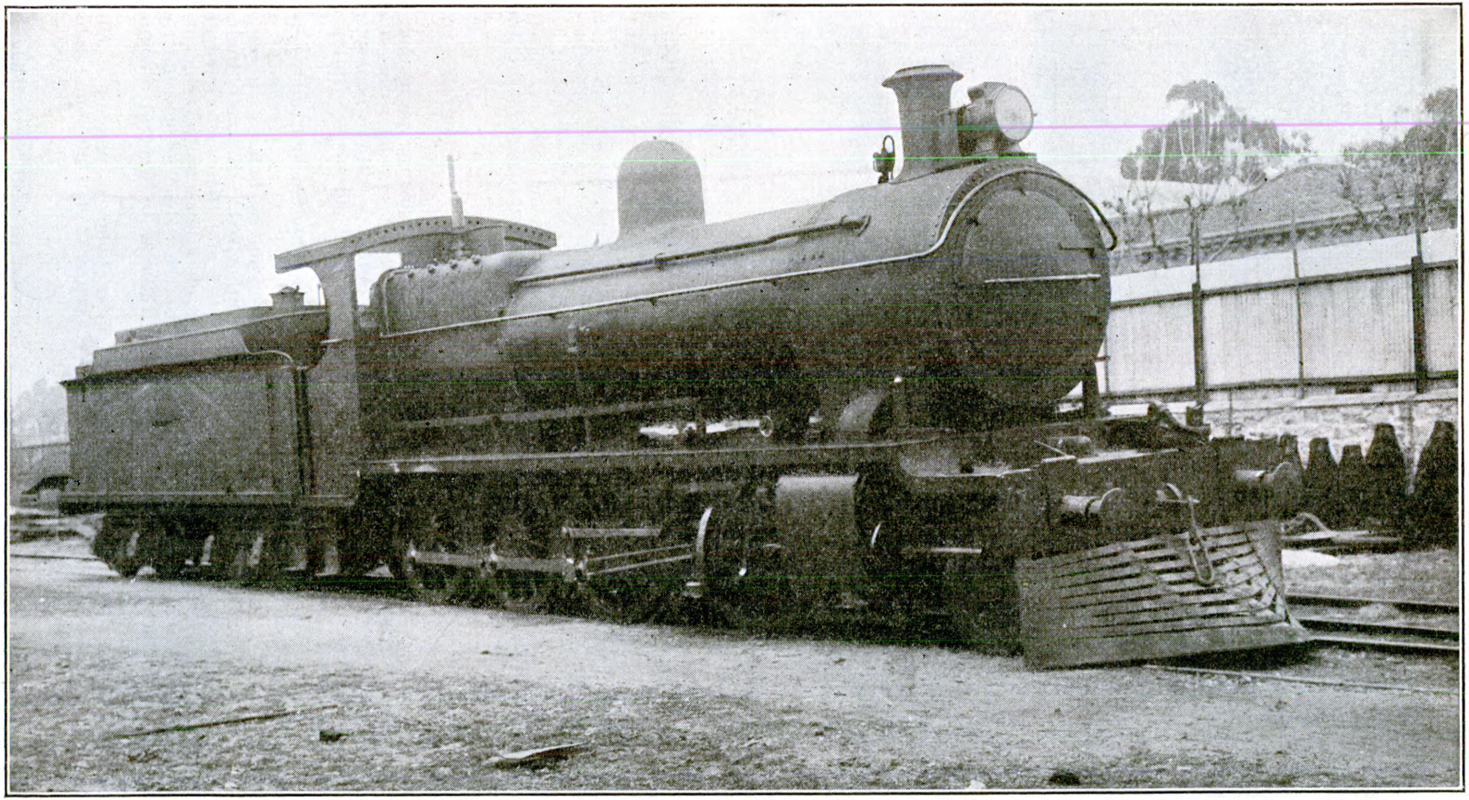

FIG. 14.—" S "-class locomotive (three-cylinder oil burner), Central Uruguay Railway

The company, as of June 30, 1925, had the following mileage in operation:

	Miles
Main line, Central and Northeastern:	
Montevideo to Rio Negro	170.71
25 de Agosto to San Jose	20.31
Montevideo to Minas	78.47
Verdun to Coronilla	6.55
Sayago to Manga	5.21
Total	281.25
Branches:	
Northern extension—	
Rio Negro to Rivera	183.33
Rivera to Brazilian frontier	2.70
Total	186.03
Eastern extension—	
Toledo to Melo	248.39
Nico-Perez to Treinta y Tres	65.55
Total	313.94
Western extension—	
San Jose to Puerto Sauce	65.23
Malabrigo to Mercedes	105.58
Rosario to Colonia	41.19
Total	212.00
Grand total	993.22

According to the Stock Exchange Year Book for 1925, the finances of the company are as follows:

Authorized share capital, £4,500,000 (including 1,000,000 shares of £10 created October, 1912, and 1,000,000 in January, 1913); issued and paid up in ordinary stock and preference shares, £2,800,000; unissued share capital is in unclassified £10 shares (£1,700,000). Authorized borrowing powers, £3,116,666; exercised, £2,776,966[1], outstanding, £2,514,300. Debit to capital at June 30, 1924, £272,901.

Two million pounds sterling ordinary stock.

Eight hundred thousand pounds sterling 5½ per cent noncumulative preference shares of £10 fully paid, with priority as to capital.

Seven thousand three hundred and fifty-three pounds sterling permanent 6 per cent debenture stock, outstanding amount of old 6 per cent debenture stock for £1,105,800, holders of balance having exercised option of 1915 of converting into 5 per cent debenture stock at £120 of latter for £100 old stock. Option to convert still open. Interest April 1 and October 1.

One million five hundred and eighteen thousand one hundred and thirty-seven pounds sterling 5 per cent debenture stock issued mainly in conversion of old permanent 6 per cent debenture stock for conversion of balance of which £8,823 5 per cent debenture stock is reserved. Authorized, £1,750,000; limited to two-thirds paid-up share capital. Interest April 1 and October 1, irredeemable except in event of liquidation or expropriation of railway by Government—then redeemable (both cases) at 110. Secured by trust deed as first floating charge on undertaking and assets other than interest in Central Uruguay Western Extension Railway (Ltd.).

Seven hundred and thirty-seven thousand four hundred pounds sterling 4 per cent "Western Extension" debentures (bearer) of £100, outstanding balance of £1,000,000 issued—£400,000 in December, 1899, at 90; £100,000 in

---

[1] Taking, in place of £7,353 permanent 6 per cent debenture stock still outstanding, the £8,823 5 per cent debenture stock reserved to replace same.

1900 at average of 85; and £500,000 in February, 1901, at 80. Authorized, £1,000,000. Interest April 1 and October 1. Redeemable at par—on or before April 1, 1960, by operation of cumulative sinking fund of minimum of three-fourths of 1 per cent per annum (commenced 1910), applicable to purchases below par or drawings (in March) at par; or at any time on six months' notice from company. Secured by trust deed as special charge (both principal and interest) on securities of Western Railway and all benefit in earnings of that railway under the working agreement.

Two hundred and fifty thousand pounds sterling 6 per cent debenture stock, issued in October, 1901, at 97½. Authorized, £250,000. Interest January 1 and July 1. Redeemable at par at option of company at any time on six months' notice. Ranks after foregoing 6 per cent debenture stock and 4 per cent "Western Extension" debentures.

Accounts to June 30 are submitted in October. Dividends have been: 1913–14, 2½ per cent; 1914–15, preference only; 1915–16, 1 per cent on ordinary; 1916–17, preference only; 1917–18, 3 per cent plus bonus of 2 per cent on ordinary; 1918–19, 4 per cent plus bonus of 2 per cent; 1919–20, 7 per cent; two years to 1921–22, preference only; 1922–23, 4 per cent on ordinary; 1923–24, 5 per cent (including 2 per cent interim in April). For 1923–24 the net earnings amounted to £523,882 (compared with £505,244 for the preceding year) and loss on exchange to £167,392 (compared with £155,630); general reserve fund, £315,049; general renewals fund, £643,855; exchange reserve, £20,000; depreciation-of-investments reserve, £10,519; fire-insurance fund, £6,347; carried forward, £45,314 (compared with £43,606). Gross receipts, July 1, 1924, to January 10, 1925, £730,633 (increase £3,266).

MAIN LINE

FINANCES

The capital account of the main line for the fiscal year ended June 30, 1924, is as follows:

Dr.:	£	s.	d.	£	s.	d.
Capital expended on line to June 30, 1923, as per last statement	4,507,713	17	9			
Capital expended, less sundry credits, during the year	21,514	19	1			
				4,529,228	16	10
Discount and expenses of issue of £200,000 5 per cent debenture stock, June, 1922	44,192,	15	7			
Deduct: Premium on sale of permanent 6 per cent debentures stock less deductions, as per previous statements	22,408	19	2			
				21,783	16	5
				4,551,012	13	3
Capital expended on Central Uruguay Western Extension Railway, as per last statement[2]	1,297,378	3	4			
Less: Amount of "Western Extension" debentures redeemed, as per contra	262,600	0	0			
				1,034,778	3	4
Total				5,585,790	16	7
Balance				272,900	16	7

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[2] This company has received the following in consideration of the above expenditure: 6 per cent debenture stock of Central Uruguay Western Extension Railway (Ltd.), £849,800, less redeemed to date, £197,700, leaving £652,100; shares (£10 fully paid) Western Extension Railway (Ltd.), £722,230; present holding, £1,374,330.

Cr.:		£	s.	d.
Ordinary stock		2,000,000	0	0
5½ per cent preference shares		800,000	0	0
Permanent 6 per cent debenture stocks, amount unconverted		7,353	0	0
5 per cent debenture stock	£1,750,000			
Less amount unissued	231,863			
		1,518,137	0	0
4 per cent "Western Extension" debenture	1,000,000			
Less redeemed to date out of sinking fund and canceled	262,600			
		737,400	0	0
6 per cent second debenture stock		250,000	0	0
Balance carried down		272,900	16	7
Total		5,585,790	16	7

Following is the balance sheet of the main line for the fiscal year ended June 30, 1924:

Dr.:	£	s.	d.	£	s.	d.
Sundry credits	156,013	0	5			
Outstanding warrants	7,251	1	5			
				163,264	1	10
Central Uruguay Western Extension Railway, balance of earnings				29,223	18	6
Interest accrued to June 30, 1924, on—						
Permanent 6 per cent debenture stock	110	5	11			
5 per cent debenture stock	18,976	14	3			
4 per cent "Western Extension" debentures	7,128	0	0			
North Eastern of Uruguay Railway, rent accrued	28,000	0	0			
				54,215	0	2
General reserve fund				295,049	12	5
Exchange reserve account				20,000	0	0
Renewal and other funds—						
General renewals	643,855	10	11			
Fire insurance	6,347	5	4			
Claims and casualty	5,407	12	5			
				655,610	8	8
Reserve for depreciation of investments				10,519	7	6
Reserves in respect of accounts with the Central Uruguay Western Extension Railway, not yet receivable—						
Interest on 6 per cent debenture stock	300,587	11	1			
Advances under guaranty and interest	207,132	7	6			
Advances for sinking fund to redeem 6 per cent debenture stock	76,533	0	8			
				584,252	19	3
Net revenue				147,314	2	3
Montevideo—						
Sundry credits	195,400	4	7			
Reserve for uncollected traffic earnings	12,472	11	11			
				207,872	16	6
Total				2,167,322	7	1

NOTE.—There is a contingent liability to the Uruguayan Government payable out of future surplus revenue only in respect of past guaranty advances to the North Eastern of Uruguay Railway Co. (Ltd.).

Cr.:	£	s.	d.	£	s.	d.
Capital account balance				272,900	16	7
Cash at bank and in hand, London				11,251	3	6
Bills receivable				95,000	0	0
Bills in transit				40,000	0	0
Sundry debits				55,351	10	11
Extension companies—Loans for additional works				224,569	0	10
Investments on account of General Reserve fund, sundry investments—at cost				215,463	15	4
Central Uruguay Western Extension Railway—						
Interest at 4 per cent accrued on £652,100 6 per cent debenture stock, receivable at September 30, 1924	6,521	0	0			
Amounts receivable only out of future surplus revenue—						
Balance of 2 per cent on 6 per cent debenture stock	300,587	11	1			
Advances under guaranty (and interest)	207,132	7	6			
Advances for sinking fund to redeem 6 per cent debenture stock	76,533	0	8			
				590,773	19	3
Lands and properties—at cost				930	15	2
Montevideo—						
Cash at bank, in hand, and in transit	342,960	1	8			
Sundry debits	15,351	3	8			
Stores on hand and in transit	215,213	12	10			
Debtors for freight accounts	37,665	19	8			
Uruguayan Government and municipal freight accounts	49,890	7	8			
				661,081	5	6
Total				2,167,322	7	1

The net revenue account of the main line for the fiscal year ended June 30, 1924, is reproduced below:

Dr.:	£	s.	d.	£	s.	d.
Interest paid and accured to June 30, 1924, on—						
Permanent 6 per cent debenture stock	441	3	8			
5 per cent debenture stock	75,906	17	0			
4 per cent "Western Extension" debentures	28,725	0	0			
6 per cent second debenture stock	15,000	0	0			
Interim dividend on 5½ per cent preference shares	22,000	0	0			
Interim dividend on ordinary stock	40,000	0	0			
				182,073	0	8
North-Eastern of Uruguay Railway—						
Rent paid and accrued to June 30, 1924	56,000	0	0			
Guaranty account—Amount returnable to Uruguayan Government in respect of year ended June 30, 1924, on account of past advances	13,108	3	4			
				69,108	3	4
Bonus to staff in Uruguay				34,000	0	0
Income tax, balance				7,608	1	0
Corporation profit tax				7,359	11	0
Balance carried down				147,314	2	3
Total				447,462	18	3

Cr.:

	£	s.	d.	£	s.	d.
Balance of revenue brought forward	523, 882	8	6			
Less exchange loss on remittances	167, 392	6	0			
				356, 490	2	6
Balance from 1922–23				43, 606	4	6
Interest on Central Uruguay Western Extension Railway, 6 per cent debenture stock	39, 990	0	0			
Amount receivable on account of interest in arrears	4, 697	10	8			
				44, 687	10	8
Transfer fees				237	7	6
Interest on loans, money on deposit, etc				2, 441	13	1
Total				447, 462	18	3
Balance brought down				147, 314	2	3

The following table shows the revenue account of the main line for the fiscal years ended June 30, 1922, 1923, and 1924:

Items	1921–22			1922–23			1923–24		
EXPENDITURES	£	s.	d.	£	s.	d.	£	s.	d.
Maintenance of permanent way, works, etc	265, 665	13	5	287, 698	16	6	305, 134	6	2
Locomotive expenses	384, 891	8	6	359, 393	17	2	386, 687	12	11
Telegraph expenses	10, 570	19	1	10, 648	18	5	11, 644	18	4
Carriage and wagon repairs	79, 435	3	7	76, 515	17	1	83, 079	3	1
Traffic expenses	308, 870	15	0	286, 289	12	4	305, 736	19	7
General charges	146, 404	11	9	144, 721	9	4	158, 071	12	6
Hire of rolling stock	12, 078	0	1	7, 500	7	5	8, 410	3	0
	1, 207, 916	11	5	1, 172, 768	18	3	1, 252, 764	15	7
Less: Amount retained from gross receipts of "Extension" companies in accordance with their working agreements	284, 734	19	4	299, 331	10	1	305, 472	16	9
	923, 181	12	1	873, 437	8	2	947, 291	18	10
Balance carried to net revenue account	400, 339	15	5	505, 243	15	8	523, 882	8	6
Total	1, 323, 521	7	6	1, 378, 681	3	10	1, 471, 174	7	4
RECEIPTS									
Passenger traffic	463, 461	10	6	461, 427	19	2	463, 549	11	2
Goods	918, 913	6	7	888, 943	1	6	980, 542	13	8
Animals	342, 755	6	1	476, 300	4	1	490, 629	6	10
Luggage and parcels	135, 553	3	8	132, 823	0	2	138, 637	19	10
Telegraph receipts	6, 179	4	9	5, 438	4	6	5, 421	10	4
Sundry	13, 939	3	8	14, 482	8	3	14, 665	17	5
Wharfage	2, 528	6	5	2, 366	14	2	2, 064	4	1
Hire of rolling stock	4, 328	3	10	3, 458	15	8	2, 995	15	5
Restaurant	3, 643	12	4	3, 962	15	4	4, 148	18	8
	1, 891, 301	17	10	1, 989, 203	2	10	2, 102, 655	16	7
Less: Traffic receipts of "Extension" companies	867, 780	10	4	610, 521	19	0	631, 481	9	3
Total	1, 323, 521	7	6	1, 378, 681	3	10	1, 471, 174	7	4

NOTE.—Operating ratio: 1921–22, 69.75 per cent; 1922–23, 63.35 per cent; 1923–24, 64.39 per cent.

The following is a table showing the comparative results of working the main line for the fiscal years ended June 30, 1921, 1922, 1923, and 1924:

Description	1920–21	1921–22	1922–23	1923–24
Receipts:	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Passengers	312, 496 9 0	305, 959 6 11	302, 135 4 9	304, 549 8 1
Parcels and luggage	95, 751 4 9	104, 802 14 7	103, 481 4 7	108, 064 2 10
Goods	626, 696 16 2	657, 111 18 8	635, 240 15 6	698, 391 6 9
Livestock	221, 634 2 4	233, 482 4 9	315, 712 5 5	338, 633 7 5
Telegrams	3, 510 10 7	2, 935 16 9	2, 814 6 10	2, 892 19 5
Wharfage	1, 963 3 7	2, 528 6 5	2, 366 14 2	2, 064 4 1
Hire of rolling stock	4, 599 11 10	4, 328 3 10	3, 458 15 8	2, 995 15 5
Restaurant	3, 324 9 5	3, 643 12 4	3, 962 15 4	4, 148 18 8
Sundries	7, 976 14 5	8, 729 3 3	9, 509 1 7	9, 434 4 8
Total gross receipts	1, 277, 953 2 1	1, 323, 521 7 6	1, 378, 681 3 10	1, 471, 174 7 4
Expenses:				
Way and works	201, 633 12 7	201, 946 18 3	213, 509 19 4	230, 180 0 9
Locomotive	564, 235 12 5	294, 219 9 1	266, 865 2 9	287, 144 17 0
Telegraph	6, 229 11 3	8, 073 6 5	7, 913 7 8	8, 791 11 3
Rolling stock	63, 904 13 6	60, 460 13 4	56, 954 1 9	62, 734 14 4
Traffic	243, 406 17 10	235, 019 1 9	213, 021 17 11	230, 665 19 5
General	119, 177 19 0	111, 384 3 2	107, 672 11 4	119, 364 13 1
Hire of rolling stock	11, 446 7 6	12, 078 0 1	7, 500 7 5	8, 410 3 0
Total expenditure	1, 210, 034 14 1	923, 181 12 1	873, 437 8 2	947, 291 18 10
Net profit	67, 918 8 0	400, 339 15 5	505, 243 15 8	523, 882 8 6
Percentage of expenses to receipts	94. 69	69. 75	63. 35	64. 39
Train-miles run	1, 369, 813	1, 174, 871	1, 244, 556	1, 325, 712
Vehicle-miles run (two axles)	31, 374, 899	27, 416, 637	31, 566, 173	34, 367, 368
Average number of vehicles per train	22. 90	23. 34	25. 36	25. 92
Receipts per train-mile	18s. 7. 91d.	22s. 6. 37d.	22s. 1. 86d.	22s. 2. 33d.
Expenses per train-mile	17s. 8. 01d.	15s. 8. 59d.	14s. 0. 43d.	14s. 3. 49d.
Net profit per train-mile	11. 90d.	6s. 9. 78d.	8s. 1. 43d.	7s. 10. 84d.
Average number of passengers per day	6, 976	7, 375	7, 862	7, 999
Average receipts per passenger	2s. 5. 46d.	2s. 3. 28d.	2s. 1. 27d.	2s. 0. 96d.
Average receipts per ton of goods	17s. 6. 21d.	21s. 5. 37d.	19s. 9. 72d.	17s. 6. 91d.
Miles of line open	273	273	273	273
Receipts per mile of line	£4, 681 2s. 11d.	£4, 848 1s. 3d.	£5, 050 2s. 3d.	£5, 388 18s. 4d.
Expenses per mile of line	£4, 432 7s. 2d.	£3, 381 12s. 4d.	£3, 199 8s. 1d.	£3, 469 18s. 8d.
Net profit per mile of line	£248 15s. 9d.	£1, 466 8s. 11d.	£1, 850 14s. 2d.	£1, 918 19s. 8d.

TRAFFIC STATISTICS

The following table indicates the character and amount of main-line traffic:

Description		1920–21	1921–22	1922–23	1923–24
Passengers, total		2, 546, 183	2, 691, 896	2, 869, 488	2, 927, 807
Cereals:					
Wheat	tons	75, 705	88, 279	60, 503	124, 373
Maize	do	22, 814	42, 085	30, 312	48, 542
Linseed	do	6, 164	2, 805	2, 697	3, 051
Oats	do	6, 792	7, 619	3, 540	5, 117
Barley	do	783	477	349	611
Other cereals	do	1, 527	805	566	861
Total	do	113, 785	142, 070	97, 967	182, 555
Stock products:					
Wool	do	35, 863	29, 646	31, 071	32, 242
Dry hides	do	4, 486	7, 960	6, 602	6, 025
Salted hides	do	11, 460	5, 068	6, 299	6, 078
Sheepskins	do	3, 801	5, 365	2, 777	2, 582
Bones and horns	do	1, 938	2, 500	1, 448	1, 170
Total	do	57, 548	50, 539	48, 197	48, 097

Description	1920–21	1921–22	1922–23	1923–24
Forest products:				
Firewood ..... tons	20, 307	8, 633	8, 560	4, 585
Trunks of trees ..... do	6, 360	3, 132	2, 196	1, 743
Charcoal ..... do	7, 248	5, 425	3, 617	2, 565
Total ..... do	33, 915	17, 190	14, 373	8, 893
Building material:				
Cement and lime ..... do	13, 644	9, 382	9, 913	13, 997
Bricks ..... do	4, 768	1, 188	2, 302	2, 461
Sand ..... do	25, 592	21, 238	41, 775	46, 460
Stone ..... do	16, 052	6, 497	24, 656	61, 456
Total ..... do	60, 056	38, 305	78, 646	124, 374
Goods traffic:				
Potatoes ..... do	6, 276	5, 382	6, 333	5, 618
Bran ..... do	14, 872	14, 014	15, 368	15, 415
Flour ..... do	21, 149	16, 417	18, 013	18, 130
Hay ..... do	13, 412	12, 111	12, 642	13, 554
Jerked beef ..... do	8, 376	2, 153	5, 287	5, 919
Limestone ..... do	113, 372	97, 720	119, 352	140, 939
Coal ..... do	23, 335	16, 168	21, 106	19, 367
Salt ..... do	20, 352	18, 465	13, 810	10, 593
Posts ..... do	7, 162	4, 445	5, 342	6, 483
Wire ..... do	2, 925	2, 050	2, 721	3, 076
Timber ..... do	16, 884	21, 113	25, 745	17, 212
First-class goods ..... do	77, 322	59, 161	57, 167	59, 566
Miscellaneous goods ..... do	124, 173	95, 317	99, 092	114, 726
Vehicles ..... do	609	145	168	218
Total goods traffic ..... do	715, 523	612, 765	641, 329	794, 736
Livestock:				
Cattle ..... number	603, 011	562, 292	764, 882	805, 279
Sheep ..... do	562, 900	450, 217	804, 282	890, 380
Horses ..... do	6, 737	6, 132	6, 817	5, 018
Pigs ..... do	36, 144	39, 115	34, 942	36, 330
Total ..... do	1, 208, 792	1, 057, 756	1, 610, 923	1, 737, 007

CENTRAL URUGUAY NORTHERN EXTENSION RAILWAY

SURVEY OF DEVELOPMENT

The Central Uruguay Northern Extension Railway dates its history from October, 1888, when it was organized to take over a concession granted by the Government on September 14 of the same year. The building of this extension involved the construction of a 2,375-foot bridge across the Rio Negro. The bridge is constructed of twenty-two 60-foot girders and nine 120-foot spans, supported by stone piers. The girders and trellis work are at a great height above the river bed, because of the annual flood rise of from 24 to 40 feet. The line was constructed through broken country crossing the Tacuarembo mountain range, which involved the construction of a 792-foot tunnel on a 1,640-foot radius curve. The line, which is 182 miles in length, was opened throughout by February, 1892.

In September, 1913, a 2½-mile line was added to connect Rivera with the Brazilian Rio Grande do Sul Railway, which runs from Cacequy in Brazil to the frontier. This short branch increased the total mileage to 185, at which it has remained. Rivera is the Uruguayan portion of a town whose other half is in Brazil and is called Sant' Anna do Livramento.

The Central Uruguay Northern Extension Railway is worked by the Central Uruguay Railway of Montevideo (Ltd.), under an agreement entered into when it was first formed, by which the parent concern undertakes to maintain and work the Northern Extension Railway in perpetuity, paying it a proportion of the gross receipts varying on a sliding scale from 40 to 55 per cent—which means that at the worst the expense ratio is never higher than 60 per cent. This is the rate when gross earnings are in the neighborhood of £50,000 per annum, and when the gross earnings are in the neighborhood of £200,000 the ratio goes down to the minimum of 45 per cent.

FINANCES

According to the Stock Exchange Yearbook for 1925, the financial condition of this extension is as follows:

By the concession (dated September 14, 1888), the Government guaranteed, for 40 years, interest at 7 per cent per annum on a capital of £5,000 per kilometer constructed, the guaranty commencing from the opening for the public service of each section of 50 kilometers. Under the scheme of arrangement of Uruguayan national liabilities formulated in 1891 the guaranty for the remaining period of the concession was reduced from 7 to 3½ per cent, payable quarterly in gold, the company, however, being allowed to retain the first 1½ per cent of net earnings before any rebate on account of guaranty begins to accrue to the Government, and under a further arrangement come to with the Government in April, 1906, when the net earnings (after allowing 40 per cent of the gross receipts, plus a constant of $87.38 per kilometer of line for each six months, as working charges) exceed 5 per cent of the guaranteed capital, the excess up to 6 per cent and one-third of the net earnings between 6 and 8 per cent is to be retained by the company, and the remaining two-thirds and the whole of the net earnings in excess of 8 per cent is to be applied wholly in repayment of sums advanced under the guaranty. Further, the Government has reserved the right to intervene in the tariffs when more than 8 per cent is earned on the real capital. In January, 1909, a further agreement was entered into with the Government whereby the company was allowed a more liberal basis for calculating the working expenses for guaranty purposes, viz, 45 per cent of the gross earnings, plus a constant of $88.50 per kilometer of line for each six months; such basis commenced to operate from the date of the opening of the first section of the Central Uruguay Eastern Extension Railway's line from Nico-Perez to Treinta y Tres, viz, October 1, 1910, and remained in force for 10 years, and was readjusted thereafter on the basis of the average cost of working the combined Central Uruguay system during such 10 years, viz, 61.14 per cent. For the service of the national debt and the railway guaranties the Government has hypothecated 45 per cent of the gross receipts of the customhouses of the Republic, and, should these revenues prove insufficient, the deficiency is to be made up from other sources of revenue; on the amount so provided the interest of the national debt forms a first charge, the railway guaranties ranking next. The line is the property of the company in perpetuity, but the option is reserved to the Government to purchase the undertaking at any time after 25 years' working at a fair valuation at the time of expropriation, plus 20 per cent profit.

Authorized, issued, and paid-up share capital, £1,000,000. Borrowing powers two-thirds (£666,666) of issued share capital exercised and outstanding £627,150. Debit to capital at June 30, 1924, £86,116.

£1,000,000 ordinary shares of £10 fully paid. Authorized, £1,000,000.

£627,150 permanent 5 per cent debenture stock—£420,000 issued at par in October, 1890, £120,000 at 95 in February, 1892, and £87,150 at 95 in August, 1892. Interest January 1 and July 1. Repayable only in event of purchase of line by Government. Secured as first charge on revenue of company, including Government guaranty, and as floating charge on undertaking and assets; no trust deed.

The accounts are made up annually to June 30 and submitted about October, an interim dividend (in 1924 of 2½ per cent) being paid in April. For 1909–10 3⅝ per cent was paid; for 1910–11, 4¼; for 1911–12 and 1912–13, 4¾ each year; for the three years to 1915–16, 4 each year; for 1916–17, 5; for 1917–18, 6½; for 1918–19, 9; for 1919–20, 8; for 1920–21, 5; for 1921–22, 4½; for 1922–23, 5; for 1923–24, 5½. Carried forward, £3,662. The Government guaranty is regularly met. Under the working agreement, in the year 1913–14, there was a profit on working accruing to this company of £59,390; in 1914–15, £42,845; for 1915–16, £55,576; in 1916–17, £67,602; in 1917–18, £97,212; in 1918–19, £109,248; in 1919–20, £106,989; in 1920–21, £86,643; in 1921–22, £75,747; in 1922–23, £84,776; in 1923–24, £86,336.

The capital account on June 30, 1924, is as follows:

	£	s.	d.	£	s.	d.
Dr.:						
Capital expended on line to June 30, 1923				1,711,924	14	10
Amount expended during year, as under—						
Alterations to pump house and new water tank—						
Buen Retiro	1,057	2	4			
Goods shed–Valle Eden	1	14	0			
Purchase of siding	343	17	2			
Purchase of land for corral, Pampa	31	18	4			
				1,434	11	10
Loan capital duty					17	6
Total				1,713,360	4	2
Balance				86,210	4	2
Cr.:						
Capital—						
Ordinary shares—100,000 shares of £10 each				1,000,000	0	0
Permanent 5 per cent debenture stock				627,150	0	0
Balance carried down				86,210	4	2
Total				1,713,360	4	2

The following is a copy of the balance sheet of the Central Uruguay Northern Extension Railway for the fiscal year ended June 30, 1924:

	£	s.	d.
Dr.:			
Debenture interest, accrued to June 30, 1924, less tax	12,151	0	8
Outstanding warrants	34	7	9
Central Uruguay Railway Co., loan for additional works	86,116	6	8
Net revenue, as per account No. 3	33,662	4	10
Total	131,963	19	11
Cr.:			
Capital account balance	86,210	4	2
Cash at bank and on deposit, London	14,816	14	7
Uruguayan Government guaranty account	1,328	0	0
Central Uruguay Railway Co., current account	29,580	0	8
Sundry debtors and debit balances	29	0	6
Total	131,963	19	11

NOTE.—There is a contingent liability to the Uruguayan Government payable out of future surplus revenue only, in respect of past guaranty advances.

The following is a copy of the net revenue account of the Central Uruguay Northern Extension Railway for the fiscal year ended June 30, 1924:

Dr.:

	£	s.	d.
Interest paid and accrued on 5 per cent debenture stock to June 30, 1924	31,357	10	0
Interim dividend of 5s. per share	25,000	0	0
Interest, etc	4,118	10	4
Uruguayan Government, estate duty	1,000	0	0
Corporation-profits tax, amount reserved	2,275	13	0
Income tax, balance	534	13	3
Balance carried down	33,662	4	10
Total	97,948	11	5

Cr.:

	£	s.	d.	£	s.	d.
Balance of revenue from 1922–23				1,303	15	6
Gross earnings	164,450	1	10			
Less: Working allowances as per agreement	78,113	15	11			
				86,336	5	11
Government guaranty				10,308	10	0
Total				97,948	11	5
Balance brought down				33,662	4	10

The table below shows the comparative results of working the Central Uruguay Northern Extension for the years ended June 30, 1920, 1921, 1923, and 1924:

Description	1919–20	1920–21	1922–23	1923–24
Receipts:	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Passengers	48,214 10 5	40,352 2 2	31,187 1 3	31,176 8 2
Parcels and luggage	6,044 1 2	5,098 18 5	4,585 13 2	4,923 2 6
Goods	121,813 6 8	99,535 19 5	92,036 16 9	92,038 16 2
Livestock	21,489 0 4	18,184 9 10	32,194 15 4	34,579 9 11
Telegrams	759 7 5	652 2 3	466 4 5	456 19 9
Sundries	572 8 2	1,193 15 11	1,007 14 7	1,275 5 5
Total gross receipts	198,892 14 2	165,017 8 0	161,478 5 6	164,450 1 10
Total expenditure	91,904 5 1	78,383 5 3	76,702 3 7	78,113 15 11
Net profit	106,988 9 1	86,634 2 9	84,776 1 11	86,336 5 11
Percentage of expenses to receipts	46.21	47.50	47.50	47.50
Train-miles run	312,286	286,529	224,048	220,316
Vehicles—miles run (two axles)	8,006,765	7,138,974	6,742,695	6,688,562
Average number of vehicles per train	25.64	24.92	30.09	30.36
Receipts per train-mile	12s. 8.85d.	11s. 6.22d.	14s. 4.98d.	14s. 11.14d.
Expenses per train-mile	5s. 10.63d.	5s. 5.65d.	6s. 10.17d.	7s. 1.09d.
Surplus per train-mile	6s. 10.22d.	6s. 0.57d.	7s. 6.81d.	7s. 10.05d.
Average number of passengers per day	198	173	121	136
Average receipts per passenger	13s. 4.21d.	12s. 9.63d.	14s. 1.48d.	12s. 6.48d.
Average receipts per ton of goods	13s. 2.56d.	12s. 7.69d.	16s. 0.57d.	16s. 3.59d.
Miles of line open	185	185	185	185
Receipts per mile of line	£1,075 1s. 11d.	£891 19s. 8d.	£872 17s. 1d.	£888 18s. 5d.
Expenses per mile of line	£496 15s. 7d.	£423 13s. 10d.	£414 12s. 1d.	£422 4s. 9d.
Surplus per mile of line	£578 6s. 4d.	£468 5s. 10d.	£458 5s. 0d.	£466 13s. 8d.

TRAFFIC STATISTICS

The following table shows the character and amount of traffic on the line:

Description		1919–20	1920–21	1922–23	1923–24
Passengers, total		72, 225	63, 036	44, 164	49, 722
Cereals:					
Wheat	tons	2, 778	1, 580	179	4, 192
Maize	do	5, 175	1, 709	1, 017	927
Linseed	do		1	5	1
Oats	do	490	536	335	313
Barley	do	334	271	126	139
Other cereals	do	773	299	52	45
Total	do	9, 550	4, 396	1, 714	5, 617
Stock products:					
Wool	do	6, 711	4, 887	6, 273	6, 170
Dry hides	do	2, 233	1, 221	1, 357	1, 206
Salted hides	do	8, 096	9, 871	4, 925	5, 245
Sheepskins	do	877	546	500	440
Bones and horns	do	1, 105	1, 062	1, 380	1, 148
Total	do	19, 022	17, 587	14, 435	14, 209
Forest products:					
Firewood	do	5, 222	13, 161	6, 605	2, 145
Trunks of trees	do	3, 182	7, 561	310	1, 616
Charcoal	do	2, 366	1, 908	807	677
Total	do	10, 770	22, 630	7, 722	4, 438
Building material:					
Cement and lime	do	4, 465	2, 748	1, 348	1, 882
Bricks	do	766	198	330	204
Sand	do	5, 296	2, 450	1, 763	2, 837
Stone	do	190	216	183	47
Total	do	10, 717	5, 612	3, 624	4, 970
Goods traffic:					
Potatoes	do	1, 397	1, 587	774	667
Bran	do	2, 102	1, 945	475	912
Flour	do	8, 881	6, 028	4, 913	5, 027
Hay	do	2, 193	1, 990	743	907
Jerked beef	do	6, 290	7, 606	5, 207	6, 049
Limestone	do	18	5		1
Coal	do	7, 535	2, 561	6, 802	4, 557
Salt	do	24, 071	16, 819	9, 462	6, 939
Posts	do	2, 878	2, 474	1, 683	2, 790
Wire	do	1, 098	756	536	718
Timber	do	17, 955	13, 547	22, 152	12, 801
First-class goods	do	16, 455	11, 361	7, 894	9, 193
Miscellaneous goods	do	43, 033	40, 449	26, 518	33, 067
Vehicles	do	418	134	52	77
Total goods traffic	do	184, 383	157, 487	114, 706	112, 939
Livestock:					
Cattle	number	138, 529	120, 401	142, 180	154, 356
Sheep	do	31, 317	54, 929	73, 476	119, 524
Horses	do	1, 492	1, 009	1, 647	912
Pigs	do	413	1, 608	1, 709	2, 836
Total	do	171, 751	177, 947	219, 012	277, 628

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in operation on the Central Uruguay Northern Extension Railway for the fiscal years ended June 30, 1923 and 1924, were as follows:

Equipment	1923	1924	Equipment	1923	1924
Locomotives:			Rolling stock—Continued		
6-wheel, coupled	6	6	Wagons—		
Small shunting	2	2	2-axle, 10 tons, covered	45	45
			2-axle, 10 tons, open	100	100
Total	8	8	Bogie platform cars	66	66
			Bogie cattle cars	10	10
Rolling stock:			Bogie sheep cars	2	2
Carriages—					
First class	2	2	Total	223	223
Second class	2	2			
Composite	1	1			
Brake vans	4	4			
Total	9	9			

CENTRAL URUGUAY EASTERN EXTENSION RAILWAY

SURVEY OF DEVELOPMENT

The Central Uruguay Eastern Extension Railway dates its history from February 18, 1889, when it acquired a concession from the Government for the construction of a line from Toledo, a station on the North-Eastern of Uruguay Railway, a few miles from Montevideo, to Artigas, a town on the Brazilian frontier. On April 20, 1906, a new agreement was entered into with the Government of Uruguay providing for the completion of the line to a point on the Brazilian frontier and an extension of about 64½ miles to the town of Treinta y Tres.

Under the original concession the Government guaranteed, for a term of 40 years, interest at the rate of 7 per cent per annum on a capital of £5,000 per kilometer constructed, the guaranty to commence from the opening for the public service of each section of 50 kilometers. Under the scheme of arrangement of Uruguayan national liabilities formulated in 1891 the guaranty for the remaining period of the concession was reduced from 7 to 3½ per cent, payable quarterly in gold, the company being allowed to retain the first 1½ per cent of net earnings before any rebate on account of guaranty begins to accrue to the Government.

The company also participated in net earnings beyond a certain amount, but a question arose with the Government as to the basis for ascertaining the working expenses. Under the new agreement entered into in 1906, however, it is provided that when the net earnings (after allowing 40 per cent of the gross receipts, plus a constant of $87.38 per kilometer of line for each six months, as working charges) exceed 5 per cent of the guaranteed capital, the excess up to 6 per cent, and one-third of the net earnings between 6 and 8 per cent, is to be retained by the company, and the remaining two-thirds and the whole of the net earnings in excess of 8 per cent is to be applied wholly in repayment of sums advanced under the guaranty. Further, the Government reserved the right to intervene in the tariff when more than 8 per cent is earned on the real capital. The Government also extended its period of guaranty for 35 years from the date of the above agreement of April 20, 1906.

In January, 1909, a further agreement was entered into with the Government whereby it was agreed to postpone the construction of the fourth section (Melo to Centurion, 30 miles) of the extension from Nico Perez to the Brazilian frontier and proceed at once with the line to Treinta y Tres (64½ miles), and in consideration therefor the company was allowed a more liberal basis for calculating the working expenses for guaranty purposes, viz, 45 per cent of the gross earnings plus a constant of $88.50 per kilometer of line for each six months. Such modified basis began to operate from the date of the opening of the first section of the Nico Perez to Treinta y Tres line to public traffic (October 1, 1910); it remained in force for 10 years and was readjusted thereafter on the basis of the average cost of working the combined Central Uruguay system during such 10 years—namely, 61.14 per cent.

For the service of the national debt and the railway guaranties the Government has hypothecated 45 per cent of the gross receipts of the customhouses of the Republic, and should these revenues prove insufficient the deficiency is to be made up from other sources of revenue; on the amount so provided the interest of the national debt forms a first charge, the railway guaranties ranking next. The line is the property of the company in perpetuity, but the option is reserved to the Government to purchase the undertaking at any time after 25 years' working at a fair valuation at the time of expropriation plus 20 per cent profit.

The line from Toledo to Nico Perez, 130 miles, has been open since September, 1901; that from Nico Perez to Melo, 118½ miles, since August 1, 1909; and that from Nico Perez to Treinta y Tres, 65½ miles, since October 1, 1911, making the total length of railway operated 311 miles, all of which is now maintained and worked in perpetuity by the Central Uruguay Railway Co. of Montevideo (Ltd.), which pays to this company a proportion of the gross receipts, varying on a sliding scale from 40 to 55 per cent.

FINANCES

The authorized share capital (ordinary and preference) is £1,800,000; issued and paid up, £1,720,000; authorized borrowing powers, two-thirds (£1,146,666) of issued share capital, all exercised and outstanding. Debit to capital at June 30, 1924, was £76,277, against which there was a loan from the operating company of £72,073. Share capital, originally £1,000,000, was increased in 1906 by £500,000, in 1908 by £100,000, and in 1911 by £200,000.

Eight hundred and sixty thousand pounds sterling ordinary shares of £10, fully paid. Authorized, £900,000.

Eight hundred and sixty thousand pounds sterling 5 per cent noncumulative preference shares of £10, fully paid with priority for capital and further participation in surplus assets equally with ordinary after repayment of latter. Authorized, £900,000.

One million one hundred and forty-six thousand six hundred and sixty-six pounds sterling permanent 5 per cent debenture stock—£463,400 issued at 95 in January, 1891; £603,266 at par subsequent to November, 1908, in part payment for lines in course of construction; and £80,000 at various prices during 1913. Authorized, £1,146,666. Interest January 1 and July 1. Irredeemable except in event of purchase of line by Government, when stock would be repayable at par. Secured as first charge on company's revenue, including Government guaranty, and as floating charge on undertaking and assets; no trust deed.

The accounts are made up annually to June 30 and submitted about October, an interim dividend (in 1924 of 3 per cent) being paid in

April. For 1909–10 4¾ per cent was paid; for 1910–11, 5¼; for 1911–12, 5¾; for 1912–13, 4¾; for 1913–14, 3¾; for 1914–15, 2⅝; for 1915–16, 2⅞; for 1916–17, 5; for 1917–18, 6½; for 1918–19 and 1919–20, 9 each year; for 1920–21, 7½; for 1921–22, 6; for 1922–23, 7½; for 1923–24, 8½. Carried forward, £7,238. The Government guaranty is regularly met. Under the working agreement, in the year 1913–14 there was a profit accruing to this company of £118,710; in 1914–15, £92,865; in 1915–16, £105,902; in 1916–17, £134,904; in 1917–18, £142,467; in 1918–19, £161,864; in 1919–20, £182,021; in 1920–21, £162,852; in 1921–22, £149,087; in 1922–23, £167,416; in 1923–24, £171,228. Gross receipts (eastern extension) from July 1, 1924, to January 10, 1925, £141,622 (decrease £1,231).

The capital account as of June 30, 1924, was as follows:

	£	s.	d.	£	s.	d.
Dr.:						
Capital expended on line to June 30, 1923				2,941,181	5	3
Amount expended during year, as under—						
Living accommodation, Reboledo	453	19	4			
Renewal of sleepers, Nico Perez to Melo	433	11	5			
Cattle corral and siding, Banado de Medina	832	5	6			
	1,719	16	3			
Less credit: Sale of land, Melo line	10	12	9			
				1,709	3	6
Loan capital duty				2	7	6
Total				2,942,892	16	3
Balance				76,226	16	3
Cr.:						
Capital—						
Ordinary shares, 86,000 shares of £10 each				860,000	0	0
5 per cent preference shares, 86,000 shares of £10 each				860,000	0	0
Permanent 5 per cent debenture stock				1,146,666	0	0
Balance carried down				76,226	16	3
Total				2,942,892	16	3

The net revenue account of the Central Uruguay Eastern Extension Railway for the fiscal year ended June 30, 1924, is as follows:

	£	s.	d.
Dr.:			
Interest paid and accrued on 5 per cent debenture stock	57,333	6	0
Interim dividend on the 5 per cent preference shares	21,500	0	0
Interim dividend on the ordinary shares, of 6s. per share	25,800	0	0
Interest, etc	913	4	9
Uruguayan Government, estate duty	1,720	0	0
Corporation profits tax, amount reserved	3,851	8	0
Balance carried down	76,038	12	10
Total	187,156	11	7

Cr.:

	£	s.	d.	£	s.	d.
Balance of revenue from 1922–23				4,753	3	9
Gross earnings	317,350	3	1			
Less working allowance as per agreement	146,122	5	3			
				171,227	17	10
Government guaranty				11,175	10	0
Total				187,156	11	7
Balance brought down				76,038	12	10

The general balance sheet for the Central Uruguay Eastern Extension Railway for the fiscal year ended June 30, 1924, is as follows:

Dr.:

	£	s.	d.
Interest accrued to June 30, 1924, on 5 per cent debenture stock, less tax	22,216	13	1
Outstanding warrants	101	7	2
Central Uruguay Railway Co., loan for additional works	72,073	3	6
Net revenue, as per account No. 3	76,038	12	10
Total	170,429	16	7

Cr.:

	£	s.	d.
Capital account balance	76,226	16	3
Cash at bank, London	23,180	2	7
Central Uruguay Railway Co., current account	67,815	13	5
Sundry debtors and debit balances	3,207	4	4
Total	170,429	16	7

NOTE.—There is a contingent liability to the Uruguayan Government in respect of past guaranty advances, payable out of future surplus revenue only.

The following table shows the comparative results of working the Central Uruguay Eastern Extension Railway for the fiscal years ended June 30, 1920, 1921, 1923, and 1924:

Description	1919–20			1920–21			1922–23			1923–24		
Receipts:	*£*	*s.*	*d.*	*£*	*s.*	*d.*	*£*	*s.*	*d.*	*£*	*s.*	*d.*
Passengers	108,678	9	8	98,294	2	7	86,382	1	9	87,305	11	10
Parcels and luggage	17,566	14	2	16,462	9	5	14,414	3	6	14,845	19	5
Goods	136,070	16	7	112,070	14	6	110,343	3	3	122,702	19	7
Livestock	71,396	4	10	71,072	12	5	95,632	3	1	88,896	15	7
Telegrams	2,916	17	9	2,131	8	10	1,237	10	5	1,242	16	7
Sundries	1,156	3	10	2,451	8	1	2,399	17	6	2,356	0	1
Total gross receipts	337,785	6	10	302,485	15	10	310,408	19	6	317,350	3	1
Total expenditure	155,764	7	5	139,633	18	10	142,993	7	10	146,122	5	3
Net profit	182,020	19	5	162,851	17	0	167,415	11	8	171,227	17	10
Percentage of expenses to receipts	46.11			46.16			46.07			46.04		
Train-miles run	479,267			458,632			403,737			395,380		
Vehicle-miles run (two axles)	13,651,647			12,936,769			14,670,668			13,923,447		
Average number of vehicles per train	28.48			28.21			36.34			35.22		
Receipts per train-mile	14s. 1.15d.			13s. 2.29d.			15s. 4.52d.			16s. 0.64d.		
Expenses per train-mile	6s. 6d.			6s. 1.07d.			7s. 1.00d.			7s. 4.70d.		
Net profit per train-mile	7s. 7.15d.			7s. 1.22d.			8s. 3.52d.			8s. 7.94d.		
Average number of passengers per day	543			522			509			504		
Average receipts per passenger	10s. 11.69d.			10s. 3.75d.			9s. 3.62d.			9s. 5.65d.		
Average receipts per ton of goods	20s. 2.09d.			18s. 0.04d.			22s. 10.18d.			20s. 7.26d.		
Miles of line open	311			311			311			311		
Receipts per mile of line							£998 2s. 0d.			£1,020 8s. 4d.		
Expenses per mile of line	£1,086 2s. 6d.			£448 19s. 8d.			£459 15s. 9d.			£469 16s. 11d.		
Net profit per mile of line	£585 6s. 6d.			£523 12s. 10d.			£538 6s. 3d.			£550 11s. 5d.		

TRAFFIC STATISTICS

Traffic statistics are presented below.

Description		1919-20	1920-21	1922-23	1923-24
Passengers, total		198,061	190,630	185,737	184,366
Cereals:					
Wheat	tons	18,381	24,725	12,427	26,887
Maize	do	11,740	8,685	12,664	14,172
Linseed	do	253	272	73	136
Oats	do	560	1,287	543	613
Barley	do	54	79	38	57
Other cereals	do	989	444	252	225
Total	do	31,977	35,492	25,997	42,090
Stock products:					
Wool	do	13,021	11,433	9,470	9,840
Dry hides	do	1,241	936	2,110	1,746
Salted hides	do	341	303	400	296
Sheepskins	do	1,742	1,235	897	872
Bones and horns	do	17	3	5	6
Total	do	16,362	13,910	12,882	12,760
Forest products:					
Firewood	do	4,337	5,787	1,204	281
Trunks of trees	do	1,654	1,786	220	428
Charcoal	do	613	632	493	537
Total	do	6,604	8,205	1,917	1,246
Building material:					
Cement and lime	do	2,337	1,954	1,333	1,639
Bricks	do	2,737	2,481	783	687
Sand	do	2,808	3,887	1,661	1,815
Stone	do	2,734	1,632	442	811
Total	do	10,616	9,954	4,219	4,952
Goods traffic:					
Potatoes	do	1,683	1,566	1,551	2,032
Bran	do	2,487	2,246	2,005	2,888
Flour	do	7,346	5,921	7,530	8,570
Hay	do	2,431	2,261	1,581	2,448
Jerked beef	do				1
Limestone	do	15	57	16	257
Coal	do	607	702	1,322	1,665
Salt	do	1,886	1,571	1,868	1,744
Posts	do	5,609	3,021	1,793	2,185
Wire	do	1,428	735	756	1,074
Timber	do	2,713	2,082	1,651	2,005
First-class goods	do	25,206	20,020	18,611	19,751
Miscellaneous goods	do	17,538	16,498	12,791	13,291
Vehicles	do	389	257	98	139
Total	do	134,987	124,498	96,588	119,098
Livestock:					
Cattle	number	224,457	214,684	288,037	279,746
Sheep	do	122,574	197,960	217,865	239,089
Horses	do	2,141	1,421	1,233	1,076
Pigs	do	17,751	11,413	12,079	12,035
Total	do	366,923	425,478	519,214	531,946

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in operation on the Central Uruguay Eastern Extension Railway for the fiscal year ended June 30, 1924, were as follows:

Locomotives:	
Four wheels, coupled	4
Six wheels, coupled	9
Total	13
Rolling stock:	
Carriages—	
Restaurant coaches	3
First class	5
Second class	5
Composite	1
Brake vans	8
Total	22
Wagons—	
Two-axle, 10 tons, open	70
Two-axle, 10 tons, covered	55
Bogie platform cars	34
Bogie cattle cars	60
Bogie sheep cars	2
Total	121

CENTRAL URUGUAY WESTERN EXTENSION RAILWAY

The Central Uruguay Western Extension Railway dates its history from 1876, when a concession was obtained for the extension of the road originally known as the Northeastern of Uruguay Railway, from San Jose to Mercedes on the Rio Negro, and to Colonia, a Uruguayan seaport. In the process of construction an iron bridge consisting of nine 50-foot and nine 36-foot spans 724 feet in length, supported on 16-inch-diameter columns, was built across the San Jose River. Damage to this bridge by floods led the management to erect one which increases the original length to 927 feet. In 1902 the entire Western Extension was completed. It is now 212 miles in length, of 4-foot 8½-inch gauge, and is held by the parent company for 60 years from January, 1902, at the end of which time the line reverts to the Government.

FINANCES

According to the Stock Exchange Yearbook for 1925, the finances of the road are as follows:

> The road is controlled by the Central Uruguay Railway Co. of Montevideo (Ltd.), which works the line and pays the Western Extension Co. a proportion of gross receipts varying on a sliding scale from 20 to 55 per cent. and guaranteeing 4 per cent on debenture stock and debenture-stock sinking fund.
>
> The capitalization consists of the following issues: The borrowing power is £2,500 per kilometer, while the debit to capital on June 30, 1925, was £61,093. Advances made under guaranty (payable out of future surplus revenue), £245,859.
>
> Eight hundred and forty-nine thousand eight hundred pounds sterling shares of £10, fully paid, including £722,230 held by controlling company. Authorized, £862,500.
>
> Six hundred and fifty-two thousand one hundred pounds sterling 6 per cent debenture stock, outstanding balance of £849,800 issued, all held by controlling

company. Authorized, £862,500. Redeemable by April 1, 1943, by cumulative sinking fund applicable to purchases at or under par or by drawings at par, or on three months' notice from company at par. Security not to be enforced so long as minimum of 4 per cent (see above) is duly paid. As to arrears, see under accounts.

One hundred and four thousand one hundred and eighty-five pounds sterling loans (£66,879) and interest (£37,806) due controlling company.

Accounts to June 30, submitted November (not published). No dividend yet. For 1923–24 a balance of £4,697 was applied in part payment of arrears of interest on 6 per cent debenture stock to June 30, 1923, leaving arrears of £300,587. Debit to net revenues after charging debenture stock interest in full, £342,549. Gross receipts July 1, 1924, to January 10, 1925 (Western Extension), £75,818 (increase £6,977).

On June 30, 1924, the capital account of the Central Uruguay Western Extension Railway was as follows:

	£	s.	d.	£	s.	d.	£	s.	d.
Dr.:									
Capital expended on line to June 30, 1923							1,757,011	15	5
Amount expended during year as under—									
Paving, Colonia				972	18	6			
Water tanks, Mercedes and Palmitas				2,815	11	1			
Oil-fuel tank, Colonia				1,120	15	8			
Barriers, San Jose				99	7	9			
				5,008	13	0			
Less credits—									
Sale of land, Colonia line	13	9	10						
Original value of old tank, Mercedes	1,319	3	0						
				1,332	12	10			
							3,676	0	2
Loan capital duty							5	2	6
Total							1,760,692	18	1
Balance							61,092	18	1
Cr.:									
Capital—									
Ordinary shares, 86,250 shares of £10 each				£862,500					
Less amount unissued				12,700					
							849,800	0	0
6 per cent debenture stock				862,500					
Less amount unissued	£12,700								
Redeemed to date out of sinking fund and canceled	197,700								
				210,400					
							652,100	0	0
							1,501,900	0	0
6 per cent debenture stock redemption account—Stock redeemed to date							197,700	0	0
Balance carried down							61,092	18	1
Total							1,760,692	18	1

The general balance sheet for the Central Uruguay Western Extension Railway for the fiscal year ended June 30, 1924, is as follows:

	£	s.	d.	£	s.	d.
Dr.:						
Debenture stock interest—						
Interest at 4 per cent accrued to June 30, 1924	6,521	0	0			
Balance of net receipts for year ended June 30, 1924, applied in payment of remaining 2 per cent for the year and arrears of interest in previous years	18,027	10	8			
Balance of 2 per cent not covered by terms of working agreement or works contract	300,587	11	1			
				325,136	1	9
Sinking fund for redemption of 6 per cent debenture stock—						
Appropriations from net revenue account	202,826	0	0			
Less 6 per cent debenture stock redeemed and canceled	197,700	0	0			
				5,126	0	0
Central Uruguay Railway—						
Loan for additional works	61,092	18	1			
Loan for extraordinary repairs	5,286	12	7			
Interest on above loans	37.805	15	7			
				104,185	6	3
Sundry credit balances				4,374	16	0
Total				438,822	4	0

	£	s.	d.
Cr.:			
Capital account—			
Balance per account No. 2	61,092	18	1
Cash in bank	432	7	9
Central Uruguay Railway—			
For balance of earnings	29,223	18	6
Sundry debit balances	5,523	8	5
Net revenue account—Balance per account No. 3	342,549	11	3
Total	438,822	4	0

NOTE.—There is a contingent liability to the Central Uruguay Railway amounting to £245,859 12s. 7d., payable out of future surplus revenue only, in respect of advances under the working agreement to cover 4 per cent interest on the 6 per cent debenture stock and sinking-fund charges.

The net revenue account of the Central Uruguay Western Extension Railway as of June 30, is as follows:

	£	s.	d.
Dr.:			
Balance brought forward from June 30, 1923	344,063	5	7
Interest at 5 per cent on debenture stock to June 30, 1924	39,990	0	0
Sinking fund for redemption of 6 per cent debenture stock	19,496	0	0
Central Uruguay Railway—Interest on loan for additional works and extraordinary repairs	3,183	16	4
Corporation profits tax	1,197	9	0
Income tax balance	3,255	7	3
Total	411,185	18	2
Balance brought down	342,549	11	3

	£	s.	d.	£	s.	d.
Cr.:						
Gross earnings	149,681	4	3			
Less working allowance as per agreement	81.236	15	7			
				68,444	8	8
Interest				191	18	3
Balance carried down				342,549	11	3
				411,185	18	2

The following table shows the comparative working results of the Central Uruguay Western Extension Railway for the years ended June 30, 1923 and 1924:

Description	1922–23	1923–24
Receipts:	£ s. d.	£ s. d.
Passengers	41,723 11 5	40,518 3 1
Parcels and luggage	10,341 18 11	10,804 15 1
Goods	51,322 6 0	67,409 11 2
Livestock	32,761 0 3	28,519 13 1
Telegrams	920 2 10	828 14 7
Sundries	1,565 14 7	1,600 7 3
Total gross receipts	138,634 14 0	149,681 4 3
Total expenditure	79,635 18 8	81,236 15 7
Net profit	58,998 15 4	68,444 8 8
Percentage of expenses to receipts	57.44	54.27
Train-miles, public	166,168	164,599
Vehicle-miles (2 axles), public	4,719,712	4,622,295

Description	1922–23	1923–24
Average number of vehicles per train, public	28.40	28.08
Receipts per train-mile	16s. 8.23d.	18s. 2.25d.
Expenses per train-mile	9s. 7.02d.	9s. 10.45d.
Net profit per train-mile	7s. 1.21d.	8s. 3.80d.
Average number of passengers per day	235	246
Average receipts per passenger	9s. 8.65d.	8s. 11.88d.
Average receipts per ton of goods	10s. 4.24d	9s. 7.45d.
Miles of line open	211	211
Receipts per mile of line	£657 0s. 9d.	£709 7s. 10d.
Expenses per mile of line	£377 8s. 5d.	£385 0s. 2d.
Net profit per mile of line	£279 12s. 4d.	£324 7s. 8d.

TRAFFIC STATISTICS

A statement of the traffic is given below:

Description	1922–23	1923–24
Passengers, total	85,846	90,142
Cereals:		
Wheat ……… tons	28,405	56,036
Maize ……… do	5,633	7,421
Linseed ……… do	4,495	4,081
Oats ……… do	1,173	2,720
Barley ……… do	111	227
Other cereals ……… do	124	467
Total ……… do	39,941	70,952
Stock products:		
Wool ……… do	2,765	3,498
Dry hides ……… do	540	564
Salted hides ……… do	631	510
Sheepskins ……… do	372	310
Total ……… do	4,308	4,882
Forest products:		
Firewood ……… do	542	709
Trunks of trees ……… do	72	91
Charcoal ……… do	1,369	1,061
Total ……… do	1,983	1,861
Building material:		
Cement and lime ……… do	1,802	2,430
Brick ……… do	582	714
Sand ……… do	482	661

Description	1922–23	1923–24
Building material—Continued		
Stone ……… tons	12,443	17,849
Total ……… do	15,309	21,654
Goods traffic:		
Potatoes ……… do	877	964
Bran ……… do	1,099	1,113
Flour ……… do	5,769	6,360
Hay ……… do	720	574
Limestone ……… do	2,043	1,347
Coal ……… do	1,750	1,396
Salt ……… do	615	526
Posts ……… do	720	795
Wire ……… do	308	352
Timber ……… do	1,311	1,512
First-class goods ……… do	11,343	14,481
Miscellaneous goods ……… do	10,988	11,298
Vehicles ……… do	58	67
Total goods traffic ……… do	99,142	140,134
Livestock:		
Cattle ……… number	129,347	113,887
Sheep ……… do	179,807	171,858
Horses ……… do	1,333	1,048
Pigs ……… do	338	247
Total ……… do	310,825	287,040

MOTIVE POWER AND ROLLING STOCK

A comparison of the motive power and rolling stock used on the Central Uruguay Western Extension Railway for the fiscal years ended June 30, 1923 and 1924, is as follows:

Equipment	1923	1924
Locomotives:		
American passenger, 4-wheel, coupled	6	5
American light passenger, 4-wheel, coupled	3	3
Total	9	8
Rolling stock:		
Large covered goods wagons	10	10
Open platform wagons	49	48
Total	59	58

DATA FOR COMBINED SYSTEM

At the end of the fiscal year 1925 the Central Uruguay Railway of Montevideo (Ltd.) had a total of 993 miles of main-line track in operation. In addition, a short time before, it acquired, at an approximate cost of £184,000, £768,500 of 4½ per cent first-mortgage bonds and $7,650,000 of the common stock, representing 51 per cent of the issued capital of the Uruguay Railway Co. (a holding company), which gave it the controlling interest in the Midland Uruguay, Midland Uruguay Extension, and the Uruguay Northern Railway companies.

OPERATING RESULTS

A comparison of the net profits of the combined system for the fiscal years ended June 30, 1922, 1923, and 1924, is as follows:

Items	1921–22	1922–23	1923–24
Main line:[1]			
Gross receipts	£1,325,522	£1,378,681	£1,471,174
Working expenditure	923,182	873,437	947,291
Net profit	402,340	505,244	523,883
Eastern extension:			
Gross receipts	283,974	310,408	317,350
Working expenditure	134,888	142,993	146,122
Net profit	149,086	167,415	171,228
Northern Extension:			
Gross receipts	147,708	161,478	164,450
Working expenditure	71,960	76,702	78,113
Net profit	75,748	84,776	86,337
Western Extension:			
Gross receipts	136,097	138,634	149,681
Working expenditure	77,886	79,635	81,236
Net profit	58,211	58,999	68,445
Total:			
Gross earnings	1,893,301	1,989,201	2,102,655
Working expenses	1,207,916	1,172,767	1,252,762
Net profit	685,385	816,434	849,893

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[1] Inclusive of Northeastern and Hygeritas Railways.

Operating results of the combined system for the fiscal years ended June 30, 1921, 1922, 1923, and 1924 are shown below:

Items	1920-21	1921-22	1922-23	1923-24
Coaching:				
Number of passengers (public)	2,701,795	2,830,171	3,016,266	3,069,358
Passenger mileage	77,725,539	76,059,620	78,016,727	78,201,939
Average miles per passenger	28.77	26.87	25.87	25.48
Fares earned	£496,688	£463,462	£416,428	£463,550
Average fare per passenger	3s. 8.12d.	3s. 3.30d.	3s. 0.72d.	3s. 0.25d.
Receipts per passenger mile	1.534d.	1.462d.	1.419d.	1.423d.
Percentage of traffic to capacity hauled	31.84d.	34.19d.	35.30d.	33.83d.
Goods and livestock:				
Tons of goods carried (public)	812,536	684,148	715,597	884,196
Tons of animals carried	271,083	248,413	345,054	364,120
Total tons of public traffic carried	1,083,619	932,561	1,060,651	1,248,316
Tons of company's revenue material	91,111	72,093	71,234	75,132
Material for new work—Capital account	5,196	6,828	3,336	5,556
Total tonnage hauled	1,179,926	1,011,482	1,135,221	1,329,004
Ton-mileage	144,614,662	120,804,243	142,432,518	158,052,614
Average mileage per ton	122.56	119.43	125.47	118.93
Freight earned—				
Goods (public)	£890,351	£918,913	£888,943	£980,543
Animals	£334,937	£342,755	£476,300	£490,629
Average freight earned per ton of goods	21s. 10.98d.	26s. 10.36d.	24s. 10.14d.	22s. 2.15d.
Average freight earned, including animals	22s. 7.38d.	27s. 0.70d.	25s. 8.92d.	23s. 6.85d.
Receipts per ton-mile	2.152d.	2.628d.	2.41d.	2.32d.
Average freight-train load—				
Traffic ... tons	110.05	112.48	115.89	124.80
Vehicles ... do	183.97	192.62	214.36	215.94
Engine ... do	69.34	69.34	69.34	69.34
Total ... do	363.36	374.44	399.59	410.08
Average load per loaded two-axle wagon ... tons	5.67	5.85	5.55	5.85
Percentage of traffic to capacity hauled	36.38	36.58	33.50	35.96
Engine running:				
Engine mileage	2,991,049	2,447,943	2,662,267	2,839,060
Train mileage	2,307,231	1,887,467	2,038,509	2,106,007
Coal consumption per engine mile ... pounds	52.34	51.50	51.04	53.70
Wood consumption per engine mile ... pounds	176.19	-----	-----	-----
Mixed coal and wood consumption per engine mile ... pounds	174.32	-----	-----	-----
Oil fuel consumption per engine mile ... pounds	33.18	38.40	40.76	42.35

Following is a statement showing the comparative results of working the combined system, inclusive of the Northern, Eastern, and Western Extensions, for the years ended June 30, 1922, 1923, and 1924:

Description	1921-22	1922-23	1923-24
Receipts:	£ s. d.	£ s. d.	£ s. d.
Passengers	463, 461 10 6	461, 427 19 2	463, 549 11 2
Parcels and luggage	135, 553 3 8	132, 823 0 2	138, 637 19 10
Goods	918, 913 6 7	888, 943 1 6	980, 542 13 8
Livestock	342, 755 6 1	476, 300 4 1	490, 629 6 0
Telegrams	6, 179 4 9	5, 438 4 6	5, 421 10 4
Wharfage	2, 528 6 5	2, 366 14 2	2, 064 4 1
Hire of rolling stock	4, 328 3 10	3, 458 15 8	2, 995 15 5
Restaurant	3, 643 12 4	3, 962 15 4	4, 148 18 8
Sundries	13, 939 3 8	14, 482 8 3	14, 665 17 5
Total gross receipts	1, 891, 301 17 10	1, 989, 203 2 10	2, 102, 655 16 7
Expenses:			
Way and works	265, 665 13 5	287, 698 16 6	305, 134 6 2
Locomotive	384, 891 8 6	359, 393 17 2	380, 687 12 11
Telegraph	10, 570 19 1	10, 648 18 5	11, 644 18 4
Rolling stock	79, 435 3 7	76, 515 17 1	83, 079 3 1
Traffic	308, 870 15 0	286, 289 12 4	305, 736 19 7
General	146, 404 11 9	144, 721 9 4	158, 071 12 6
Hire of rolling stock	12, 078 0 1	7, 500 7 5	8, 410 3 0
Total expenditure	1, 207, 916 11 5	1, 172, 768 18 3	1, 252, 764 15 7
Net profit	683, 385 6 5	816, 434 4 7	849, 891 1 0
Percentage of expenses to receipts	63. 87	58. 96	59. 58
Train-miles run	1, 887, 467	2, 038, 509	2, 106, 007
Vehicle-miles run (two axles)	47, 865, 344	57, 699, 248	59, 601, 672
Average number of vehicles per train	25. 36	28. 30	28. 30
Receipts per train-mile	20s. 0.49d.	19s. 6.20d.	19s. 11.62d.
Expenses per train-mile	12s. 9.59d.	11s. 6.08d.	11s. 10.77d.
Surplus per train-mile	7s. 2.90d.	8s. 0.12d.	8s. 0.85d.
Average number of passengers per day	7, 754	8, 264	8, 386
Average receipts per passenger	3s. 3.30d.	3s. 0.72d.	3s. 0.25d.
Average receipts per ton of goods	26s. 10.36d.	24s. 10.14d.	22s. 2.15d.
Miles of line open	980	980	980
Receipts per mile of line	£1, 929 18s. 0d.	£2, 029 16s. 0d.	£2, 145 11s. 4d.
Expenses per mile of line	£1, 232 11s. 4d.	£1, 196 14s. 1d.	£1, 278 6s. 8d.
Net profit per mile of line	£697 6s. 8d.	£833 1s. 11d.	£867 4s. 8d.

TRAFFIC STATISTICS

Traffic statistics for the combined system are given in the following table:

Description	1920–21	1921–22	1922–23	1923–24
Passengers, total...number	2, 701, 795	2, 830, 171	3, 016, 266	3, 069, 358
Cereals:				
Wheat...tons	87, 202	99, 151	72, 923	146, 294
Maize...do	24, 811	44, 912	32, 366	52, 380
Linseed...do	7, 802	5, 364	5, 968	5, 311
Oats...do	7, 388	8, 250	3, 901	5, 422
Barley...do	787	497	362	634
Other cereals...do	1, 876	1, 015	708	1, 071
Total...do	129, 866	159, 189	116, 228	211, 112
Stock products:				
Wool...do	35, 873	29, 755	31, 247	32, 527
Dry hides...do	4, 502	8, 009	6, 721	6, 168
Salted hides...do	11, 472	5, 088	6, 431	6, 304
Sheepskins...do	3, 813	5, 393	2, 824	2, 632
Bones and horns...do	1, 991	2, 502	1, 450	1, 173
Total...do	57, 651	50, 747	48, 673	48, 804
Forest products:				
Firewood...do	43, 289	17, 298	15, 713	7, 281
Trunks of trees...do	14, 544	4, 088	2, 485	3, 451
Charcoal...do	7, 729	5, 744	4, 103	2, 958
Total...do	65, 562	27, 130	22, 301	13, 690
Building material:				
Cement and lime...do	15, 060	10, 324	11, 035	15, 184
Bricks...do	7, 156	2, 562	3, 698	3, 653
Sand...do	32, 238	24, 217	44, 216	50, 688
Stone...do	18, 341	11, 734	33, 529	68, 390
Total...do	72, 795	48, 837	92, 478	137, 915
Goods traffic:				
Potatoes...do	7, 072	6, 153	6, 982	7, 077
Bran...do	17, 291	16, 109	17, 520	18, 835
Flour...do	29, 651	24, 550	29, 280	32, 092
Hay...do	15, 460	13, 925	13, 698	15, 004
Jerked beef...do	8, 376	2, 153	5, 287	6, 050
Limestone...do	113, 394	97, 818	119, 364	140, 965
Coal...do	23, 400	16, 283	21, 159	19, 431
Salt...do	20, 815	18, 797	14, 245	11, 222
Posts...do	9, 367	5, 597	6, 675	8, 637
Wire...do	3, 047	2, 177	2, 850	3, 284
Timber...do	22, 278	27, 894	30, 502	21, 263
First-class goods...do	84, 721	65, 659	64, 325	68, 054
Miscellaneous goods...do	124, 032	90, 584	93, 016	113, 304
Vehicles...do	736	236	258	337
Government service...do	7, 022	10, 310	10, 756	7, 120
Total...do	812, 536	684, 148	715, 597	884, 196
Livestock:				
Cattle...number	619, 616	571, 382	787, 154	827, 881
Sheep...do	582, 328	462, 413	819, 246	922, 305
Horses...do	7, 735	7, 035	7, 428	5, 604
Pigs...do	38, 318	42, 279	37, 582	38, 971
Total...do	1, 247, 997	1, 083, 109	1, 651, 410	1, 794, 761
Brazilian interchange traffic:				
Received from Brazil...tons			50, 088	44, 725
Dispatched to Brazil...do			21, 684	16, 346
Total...do			71, 772	61, 071

OPERATING OFFICIALS AND PURCHASES

The operating officials for the fiscal year ended June 30, 1925, are as follows (the address in each case being Montevideo, Uruguay):

General manager, C. W. Bayne, C. B. E.
Assistant general manager, H. H. Grindley.
Chief accountant, John Miller.
Chief mechanical engineer, Percy Sedgfield.
Traffic superintendent, F. C. Pearson.
Resident engineer, W. F. Bush.
Chief storekeeper, T. B. Davies.
Telegraph and signal superintendent, C. W. Somersgale.
Chairman of local committee, Alfredo Bocage.

Purchases are made through the London office of the railway, usually by public tender.

RIGHT OF WAY

Altitude.—The road runs from 3.79 meters at Montevideo to 299.53 meters above sea level at Tupambae, the highest point on the road.

Gauge.—The gauge of the road is 4 feet 8½ inches.

Grades.—The maximum grade on the road is 1.8 per cent for a distance of 1 kilometer.

Curves.—The minimum curve radius is 300 meters.

Ballast.—Ballast of sand, gravel, and crushed rock, obtained locally, is used.

Ties.—Native hardwood (quebracho) and Australian jarrah and steel ties, 2.50 by 2.24 meters by 0.12 meter, spaced 1,400 per kilometer, are used on the road.

Rails.—Rails weighing 60½, 65, and 80 pounds, in 24 to 33 foot sections, are used. Cross-section dimensions of the 80-pound rails, which are now adopted as standard, are as follows: Height, 5¼ inches; width of heel, 2½ inches; flange, 4½ inches.

Water.—Water is obtained locally from wells and streams and stored in tanks of C. I. plate steel and reinforced concrete. Water stations are located at various distances apart, the maximum being 33¾ miles.

Fuel.—Coal imported from England and oil from Mexico are used as fuel on the road. Seventy-five of the locomotives are oil burners and 63 coal burners. No immediate changes are planned in the use of fuel. All new locomotives, however, will be oil burners, because of the lower price of oil as fuel when compared with coal. Fueling stations are located at various distances apart, up to a maximum of 119⅝ miles.

Signaling equipment.—Mechanical railway signals are used; the entire stretch of track is equipped with these. About 125 signal stations are in use. The railway operates a telegraph and telephone system using dry cells.

Lighting.—Forty-three first-class cars, 13 second-class, and 35 third-class cars are electrically lighted. On the remaining coaches Colza oil lamps are used. Current is supplied for lights of cars by means of generators driven from car axles. Practically all the equipment is manufactured by J. Stone & Co. (Ltd.). Thirty-one of the coaches are equipped with a 16-volt storage battery. The batteries have 8, 16, and 24 cells, respectively, and have 175, 315, and 245 ampere-hour capacity. The number of lamps per car ranges from 11 to 40, with an average of 20 watts per lamp and a voltage of 24. The road has in operation five fans of 12½-inch blade spread.

Clearance.—The clearance on the road is: Minimum height, 4.80 meters above rail; minimum width, 2 meters from center line of track.

Fences and cattle guards.—The entire right of way is fenced, mainly with quebracho posts and galvanized wire. Ample guards of steel grating are provided.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate as heavy traffic as they were designed to carry.

Bridges.—There are 364 bridges on the road, made of steel, varying in length from 30 to 2,500 feet.

Tunnels.—There is one tunnel, 228 meters long, constructed entirely of rock, located at kilometer 470 on the Northern Extension near the Banado de Rocha Station.

MOTIVE POWER AND ROLLING STOCK

The following is a comparison of the motive power and rolling stock for the entire system, inclusive of "extension" companies, for the fiscal years ended June 30, 1914 and 1924:

Equipment	1914	1924
Locomotives:		
Small shunting "A1" class	1	1
Large shunting "B," "B1," and "K" classes	10	10
Four wheels, coupled, "C" class	12	12
Side tank, 4 wheels, coupled, "D" class	6	8
Passenger 6-wheels, coupled, "F" class	6	10
Simple goods, 6 wheels, coupled, "G" class	20	20
Simple goods, 8 wheels, coupled, "H" class	3	3
Simple goods, 6 wheels, coupled, "L" class	16	16
Simple goods, 6 wheels, coupled, "N" class	29	29
American passenger 4-wheels, coupled, "O" class	6	5
American passenger 4-wheels, coupled, "P" class	3	3
Simple goods 8-wheels, coupled, "R" class	15	15
Eight wheels, coupled, "S" class	--------	6
Total	127	138
Carriages:		
Four-axle bogie carriages—		
First class	27	35
Second class	27	27
Composite	20	19
Restaurant coaches	11	16
Special kitchen carriages	2	2
Bogie sleeping carriages, first class	12	12
Official coaches	9	10
Total carriage stock	108	121
Brake vans and horse boxes	2	2
Bogie, 4-axle	74	73
Bogie, 2-axle	6	5
Total brake-van stock	82	80
Wagons:		
2-axle stock—		
10-ton open wagons	709	709
Two-axle covered goods wagons	369	369
Four-axle stock—		
Refrigerator wagons	--------	50
Open-platform wagons	435	832
Covered goods wagons	86	86
Cattle wagons	500	490
Sheep wagons	80	79
Special wagons for carrying heavy weights	2	7
Oil tank wagons	--------	27
Water tank wagons	--------	3
Special vehicles	--------	3
Total number of wagons	2,181	2,655
Traveling cranes	3	3

The larger engines have cylinders measuring 1 foot 5½ inches to 1 foot 9 inches by 2 feet to 2 feet 2 inches stroke, and the smaller engines have cylinders measuring 11 inches to 1 foot 4 inches by 1 foot 6 inches to 2 feet stroke. The engines, for the most part, are of British make. In addition, the road has four hand cars. Approximately 30 tow cars are in reserve to replace the hand cars. These tow cars are pulled by horses. Except for the wheels they are built in the shops of the company at Montevideo and consist of a kind of box mounted on two trucks. The box is detachable and has a handle at either corner which enables four men to lift it off to one side of the track. The cars carry about 3 tons of material in addition to a section gang of 50 men.

Central screw couplers and side buffers are in use. Couplers are 3 feet 4 inches above rails at center of buffer. There are no Government regulations concerning draft rigging, couplers, and buffers.

REPAIR SHOP

The road has one repair shop located at Penarol, near Montevideo. This shop is equipped with tools, machinery, and foundries sufficient for doing ordinary repairs and construction.

GOVERNMENT RAILWAY ADMINISTRATION

(LA ADMINISTRACIÓN DE FERROCARRILES Y TRANVÍAS DEL ESTADO)

SURVEY OF DEVELOPMENT

The history of the " Government " or " State " Railways of Uruguay dates from January, 1915, when the Government acquired the Ferrocarril del Norte (Northern Railway), which was constructed in 1878 between Montevideo and Santiago Vazquez on the Santa Lucia River, a distance of 19.5 kilometers. Recently it was reported that it is planned to electrify part of this road. It is also stated that La Transatlántica, a German street-car system of Montevideo which is under a franchise obligation to construct 5 kilometers of additional line outward from Montevideo, has effected an arrangement with the company whereby it may run its street cars over the tracks of the Northern Railway instead of installing new tracks. On December 28, 1914, the Government authorized the construction of the Ferrocarril del Estado (State Railway), which connects Durazno with Trinidad, a distance of 46.5 kilometers. This line was opened to traffic in 1915. On January 3, 1919, the Government took over the Ferrocarril Uruguayo del Este (Uruguay Eastern Railway), which extends from Olmos to Maldonado, a distance of 114.3 kilometers. On January 30, 1919, the Uruguay Railway connecting Rocha with La Paloma, a distance of 30 kilometers, which was constructed in the year 1916, was added to the Government system. The Government also owns a horse street-car system (Tranvía del Norte) in Montevideo, but on December 11, 1925, certain of its lines were suspended and it was planned at that time to discontinue the entire service on December 31 of the same year. This street-car line, during the last few years, accumulated a deficit of more than $1,000,000. The line is 12.8 kilometers in length and operates about 50 cars, employing 150 men and using 500 horses. It was originally intended to electrify this street-car line, but now it is thought that a bus service will be established instead. The Government also owns a spur extending from Sayago to La Tablada (stock yards), a distance of 3.6 kilometers. At the present time this spur is operated by the Ferrocarril Central de Uruguay for convenience of transportation of animals, the Government receiving no income therefrom.

At the present time the Government has under construction a railway from San Carlos to Rocha, which will connect the Uruguay Eastern Railway with the Uruguay Railway. The line will be approximately 72 kilometers in length. In addition, the Government has projected approximately 429.2 kilometers. None of these projects have as yet taken a definite form with the exceptions of a line from Olmos to Montevideo, which is needed to give an outlet to the port for the Uruguay Eastern Railway, and a line which was to run between Florida and Sarandi del Yi, which was to be taken up at the session of Congress convening February 15, 1926. As of June 30, 1925, the Government owned 226.7 kilometers of track, made up as follows:

	Kilometers
Uruguay Railway	30.0
State Railway	46.5
Uruguay Eastern Railway	114.3
Northern Railway	19.5
Sayago to La Tablada	3.6
Northern Tramways	12.8
Total	226.7

FINANCES

All of the foregoing railways are owned by the Federal Government of Uruguay, being guaranteed by the taxing and borrowing powers of the Government. The outstanding internal debt on June 30, 1925, on the guaranty bonds of the Uruguay Eastern Railway amounted to 208,400 pesos; the external 5 per cent debt of 1919 on the Uruguay Railway from Rocha to La Paloma amounted to 1,013,420 pesos; and the external 5 per cent debt of 1919 on the Uruguay Eastern Railway amounted to 2,601,544 pesos. An internal railway loan of 2,500,000 pesos was listed on June 30, 1925, as authorized, but it has not yet been floated.

Following is the balance sheet of the Government Railway Administration for the fiscal year 1924–25:

ASSETS

	Pesos
Ferrocarril del Norte (Northern Railway):	
Right of way, works, telephone, etc	545,688
Stations and buildings	99,935
Rolling stock	157,184
Machinery and tools	13,379
Real estate	49,917
Furniture and fixtures	961
New constructions	92
Extension of line to Santa Lucia Bridge	6,710
Coal	2,267
Sidetrack, Arenera del Norte	11,036
Accounts receivable	30
Warehouses	48,230
Total	935,429
Tranvía del Norte (Northern Tramways):	
Right of way and works	131,836
Rolling stock	64,796
Harnesses	3,497
Furniture and fixtures	7,282
Real estate	126,658
Central station	40
Forage	749
Miscellaneous	21,776
Total	356,634

	Pesos
Ferrocarril Uruguayo del Este (Uruguay Eastern Railway):	
Right of way, works, and telegraph	2, 137, 350
Stations and buildings	258, 865
Rolling stock	353, 224
Machinery and tools	34, 920
Furniture and fixtures	14, 172
Autobuses	8, 414
Motor cars in custody	80, 582
Warehouses	117, 924
New constructions	752
Coal	3, 524
Accounts receivable	1, 076
Total	3, 010, 803
Ferrocarril del Estado (State Railway):	
Right of way, works, and telegraph	843, 742
Machinery and tools	3, 820
Stations and buildings	57, 339
Rolling stock	353, 198
Furniture and fixtures	3, 063
Warehouses	19, 260
Miscellaneous property	454
Coal	3, 125
Adjustment of materials	4, 747
Accounts receivable	341
Cash	1, 837
Total	1, 290, 926
Uruguay Railway:	
Right of way, works, and telegraph	472, 036
Stations and buildings	118, 361
Rolling stock	124, 200
Machinery and tools	19, 387
Furniture and fixtures	3, 281
Coal	1, 463
Accounts receivable	387
Cash	296
Miscellaneous property	138
Warehouses	17, 284
Total	756, 833
Administration:	
Credit for purchase of materials	17, 447
Montevideo Electric Plant	1, 874
Studies for electrification	2, 803
Pavements	1, 326
Advances	80
Furniture and fixtures	18, 326
Suppliers	17, 675
Indemnizations receivable	804
Insurance policies	3, 599
Cash	2,761
Gold account, Bank of Republic	61, 031
Official fares and freight	15, 880
Amortization of sidetrack, Arenèra del Norte	844
Account current	13, 686
Books and office supplies	9, 581
Central Uruguay Railway	1, 182
Total	168, 899
Grand total assets	6, 519, 524

LIABILITIES

	Pesos
Special authorizations	17,447
Ministry of Public Works	1,867
Credits in suspense	3,535
Salaries payable	228
Materials retired from Rocha	74,555
Various creditors	45,464
Motor cars	80,000
Departmental administrative council	136,500
Obligations for cancellation	87,738
Subsidy fund	105
Salaries and wages	27,311
Silver account, Bank of the Republic	166,835
Maintenance fund	1,000
Federal Government, loan account	50,000
National public health	1,561
Pensions	8,609
Deposits in guaranty	7,192
Pensions (law of June 2, 1925)	13,983
Capital	5,795,594
Total liabilities	6,519,524

Following is the income and profit-and-loss statement for 1924–25.

INCOME AND PROFIT-AND-LOSS STATEMENT

FERROCARRIL URUGUAYO DEL ESTE

Receipts	Amount	Expenditures	Amount
	Pesos		*Pesos*
Passengers	109,348	Track and works	64,613
Baggage	1,637	Traction	61,008
Express	12,433	Telegraph and telephone	1,537
Freight	132,254	Rolling stock	17,056
Telegraph	1,260	Traffic	33,919
Animals	12,514	General	6,151
Special trains	791	Accident, Puente Solis Chico	4,576
Rent on trains	6,426	Indemnization	32
Leases	1,489	Insurance policies	2,210
Miscellaneous	1,761	Books and office supplies	1,170
		Commissions	282
Total	279,913	Administration	31,352
		Total	223,906

FERROCARRIL DEL ESTADO

Receipts	Amount	Expenditures	Amount
	Pesos		*Pesos*
Passengers	7,024	Track and works	14,776
Baggage	146	Traction	13,985
Express	3,199	Telegraph and telephone	106
Freight	23,227	Rolling stock	586
Telegraph	26	Traffic	13,026
Animals	8,157	General	1,195
Special trains	459	Rent of train	1,471
Leases	150	Derailment, kilometer 32	101
		Insurance policies	576
Total	42,388	Books and office supplies	455
		Administration	7,986
		Total	54,263

INCOME AND PROFIT-AND-LOSS STATEMENT—Continued

URUGUAY RAILWAY

Receipts	Amount	Expenditures	Amount
	Pesos		*Pesos*
Passengers	3,755	Track and works	16,285
Baggage	23	Traction	9,876
Express	561	Telegraph and telephone	123
Freight	49,565	Rolling stock	5,785
Leases	609	Traffic	14,520
Sand	185	General	1,560
Miscellaneous	80	Indemnization	766
		Insurance policies	626
Total	54,778	Books and office supplies	220
		Commissions	85
		Administration	8,167
		Total	58,013

FERROCARRIL DEL NORTE

	Pesos		Pesos
Passengers	27,334	Track and works	15,598
Baggage	1	Traction	80,411
Express	2,205	Telegraph and telephone	147
Freight	51,846	Rolling stock	25,457
Animals	127	Traffic	38,051
Freight on supplies	114,404	General	3,511
Slaughtering at La Union	7,705	Accident, Parada "Fynn"	306
Slaughtering, Montevideo	155	Indemnization	120
Rent of trains	117	Insurance policies	1,850
Leases	1,507	Books and office supplies	480
Miscellaneous	557	Transportation to markets	5,743
		Leases	286
Total	205,958	Administration	25,206
Grand total receipts	583,037	Total	197,166
		Grand total expenditures	533,348

The financial results for 1924–25 may be briefly summarized:

	Pesos
Total receipts	583,037
Total expenditures	533,348
Net profit	49,689
Profits:	
Northern Railway	8,792
Uruguay Eastern Railway	56,007
Total profits	64,799
Losses:	
State Railway	11,875
Uruguay Railway	3,235
Total losses	15,110
Net profit	49,689

La Administración de Ferrocarriles y Tranvías del Estado suffered a loss of 4,015 pesos in administration and a loss of 122,973 pesos on the horse street-car system of Montevideo.

TRAFFIC STATISTICS

The following table shows traffic movement for the fiscal year ended June 30, 1925:

PASSENGERS

Passengers carried:	
Uruguay Eastern	71,130
Montevideo-Santiago Vasquez	166,396
Durazno-Trinidad	5,824
La Paloma-Rocha	5,054
Total	248,404
Train-miles run:	
Uruguay Eastern	2,778,939
Montevideo-Santiago Vasquez	1,559,494
Durazno-Trinidad	164,315
La Paloma-Rocha	88,380
Total	4,591,128

FREIGHT

Freight carried (tons):	
Uruguay Eastern	91,027
Montevideo-Santiago Vasquez	102,477
Durazno-Trinidad	15,647
La Paloma-Rocha	17,004
Total	226,155

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the fiscal year ended June 30, 1925, were as follows:

President: Bautista Lasgoity, Avenida 18 de Julio 974, Montevideo, Uruguay.
Vice president: Juan Storm, Calle J. C. Gomez 1544, Montevideo, Uruguay.
Secretary: Ricardo Martinez Quiles, Calle San Jose 1143, Montevideo, Uruguay.
Manager: Jose Leon Ellauri, Calle Francisco Solano Antuna 2960, Montevideo, Uruguay.

The board of directors is made up as follows:

Alberto Voulminot, Calle Agraciada 3076, Montevideo, Uruguay.
Dr. Mario Berro, Calle Cerrito 624, Montevideo, Uruguay.
Leandro Barbosa, Calle Victoria 1594, Montevideo, Uruguay.
Andres Folle Illa, Calle Sarandi 327, Montevideo, Uruguay.
Raul Regules, Calle San Jose 1010, Montevideo, Uruguay.

The principal purchases are made by public tender, while purchases of small importance are by private transaction. All materials and equipment not manufactured locally are purchased directly from foreign factories.

RIGHT OF WAY

Altitude.—The various lines, on the whole, run through comparatively level country. The only altitudes of any importance are on the Eastern Railway.

Gauge.—The gauge of all lines is of standard 4 feet 8½ inches.

Curves.—The minimum curve radius is 400 meters.

Grades.—The maximum grade is 1.5 per cent for a distance of 2 kilometers, located at kilometer 5 on the Eastern Railway.

Rails.—Rails weighing 66 pounds per meter in sections of 8 meters are used. It is planned to replace the rails now in use.

Ties.—Ties are of Argentine quebracho and other hard wood, 2½ by 0.24 by 0.12 meters, spaced 1,250 to the kilometer.

Ballast.—Sand, gravel, and crushed rock are used for ballast, according to the availability of materials.

Clearance.—The clearance limits are 15.9 feet from top of rail and 6.5 feet from center of track.

Fences and cattle guards.—Most of the right of way is fenced with wire and suitable cattle guards are provided whenever necessary.

Signaling.—All signaling is done by hand.

Water.—The water supply on lines not reaching Montevideo is generally taken from streams. The water supply for the Northern Railway is taken from the Montevideo waterworks. The maximum distance between watering stations is 37½ miles. Water tanks generally are constructed from steel plates.

Fuel.—Coal of British origin is in general use. Fueling supplies are taken at terminal stations.

Maintenance.—All parts of the roadbed and track are in sufficiently good repair to accommodate the traffic they are required to stand.

Bridges.—There are five steel bridges in use.

Tunnels.—There are no tunnels on any of the lines.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock on the roads for the fiscal year ended June 30, 1925, are shown below. Eighteen "Mogul" and "Prairie" locomotives are in use, the engines weighing 45 tons and the cylinders measuring 17 by 24 inches. Cars are as follows: Freight cars, 213; flat cars, 129; cattle cars, 41; meat cars, 29; kitchen car, 1; tank cars, 2; crane, 1; passenger coaches, 23; private coaches. 2; total, 441.

Central screw couplers and side buffers are in use on all lines except the Eastern Railway, where American cars and couplings are used. Couplers are at a height of 3 feet 4 inches above rails at center of buffer. There are no Government regulations regarding draft rigging, couplers, or buffers.

REPAIR SHOPS

The system has three repair shops, one located at Montevideo, one in Olmos, and one in Rocha. A maximum of 80 employees are engaged in these shops, which have facilities for making ordinary repairs. The shops are equipped with one foundry capable of handling small castings. An average of three locomotives and a number of cars are repaired annually.

NORTH-WESTERN OF URUGUAY RAILWAY CO. (LTD.)

SURVEY OF DEVELOPMENT

This company dates its history from May 3, 1882, when it was registered to acquire a railway and other property belonging to the North-Western Railway of Montevideo Co. (Ltd.). The latter company was organized to construct and operate a line from the port of Salto to Santa Rosa on the Brazilian frontier under a concession granted by the Government of Uruguay on October 23, 1868. The road parallels a section of the Uruguay River which, owing to rapids, is not navigable. The total length of the line at the present time is 113 miles, extending from Salto to Cuareim. No new lines are under construction or projected. In 1885, 72 miles of track were opened. In that year a new arrangement was concluded with the Uruguayan Government, under which the company agreed to complete the line to the terminus originally decided upon at Santa

Rosa, where it would connect with the railway system of southern Brazil. The Uruguayan Government, under the arrangement of 1885, gave a guaranty for 40 years of £29,400 per annum, commencing with the opening of the sections of the extension, but under the debt rearrangements of 1891 this was reduced by one-half. The guaranty is on the new line, the original line being unguaranteed. The net receipts of the whole line are divided for the purpose of guaranty on a mileage basis, and the portion applicable to the guaranteed line is applied as follows: One and one-half per cent is retained by the company, between 1½ per cent and 5 per cent of the amount is applied in reduction of the guaranty, between 5 per cent and 6 per cent is retained by the company, and above 6 per cent is repayable to the Government on account of past advances on the guaranty account. The extension was opened in sections and completed in 1887. The guaranty came into full operation at that time and expired on July 31, 1925. The properties belong to the company in perpetuity, and the railway is free from all imposts and dues for the term of 40 years. The earnings of the railway have never been much, nor have they ever come up to the various anticipations indulged in during the early years of its history, when an extensive system of railways was in course of construction in Brazil which were to join up with this company at its terminus on the Rio Cuareim.

It was fully expected that when this was completed a large traffic would result, especially as it was proposed to construct a bridge across the river so as to give physical connection between the two railway systems. It was not, however, until May, 1911, that active steps to build this bridge were taken, when the Quarahim International Bridge Co. was registered and plans for the bridge were placed before the authorities, after which the necessary capital was raised. Eventually approval of the plans was obtained and the capital found, but difficulties in obtaining material first intervened, then progress in construction was much retarded by heavy rains, and it was not until July, 1915, that the bridge was opened, since which time there has been a distinct improvement in the earnings, although nothing very great. The anticipated connection with the railway system linking up with the capital, Montevideo, was expected to benefit this railway, but the Midland Uruguay Railway has been opened many years without any material benefit to this concern.

The administration of this company, the Midland Uruguay, and the Northern Uruguay has been concentrated at Paysandu under one management.

The company holds 5,000 fully paid £1 shares (a one-half interest) in the Quarahim International Bridge Co. (Ltd.); these, together with certain lands at Zanja Honda, are included in the balance sheet at the nominal figure of £5.

FINANCES

According to the Stock Exchange Yearbook for 1925, the finances of the road are as follows:

One hundred and twenty thousand one hundred and twenty pounds sterling ordinary stock. Authorized, £500,000. Price in official list, 2½.

Five hundred and eighty-three thousand eight hundred and fifty pounds 6 per cent noncumulative first preference stock with priority as to capital without further participation. Authorized, £600,000. Price in official list, 7. Also quoted Liverpool, Manchester.

Two hundred and ninety-three thousand one hundred and seventy-three pounds 5 per cent noncumulative second preference stock with second priority as to capital without further participation. Authorized, £310,000. Price in official list, 5.

Two hundred and ten thousand and one pounds 6 per cent debenture stock (1882), outstanding balance of £400,000. Authorized, £400,000. Interest June 15 and December 15. Perpetual; under authority of holders, however, certain investments in hands of trustees were sold and £189,999 stock redeemed during 1921–22, 1922–23. and 1923–24. Secured by trust deed as first specific charge on railway and Government guaranty and on sundry investments on trustee stocks now amounting to £121,600. Trustees: H. G. M. Conybeare; Bank of London and South America (Ltd.). Price in official list, 72½. Also quoted Liverpool.

Sixty-four thousand nine hundred and ninety-five pound 6 per cent second debenture stock (1894), outstanding balance of £72,625. Authorized, £100,000. Interest June 15 and December 15. Repayable at 110 at any time on six months' notice from company or in event of voluntary liquidation. Secured by trust deed in same way as, but subject to, debenture stock of 1882. Trustees: Union Commercial Investment Co. (Ltd.). Price in official list, 52½.

The accounts are made up annually to June 30 and submitted in November.

For 1905–6, 1 per cent was paid on the first preference; for 1906–7, 1907–8, and 1908–9, 2 per cent each year; for 1909–10, 2½; for 1910–11 and 1911–12, 3; for 1912–13, 2½; for 1913–14, 1914–15, 1915–16, 1916–17, and 1917–18, nil, only interest charges being met; for 1918–19, 1½ per cent paid on the first preference stock; for 1919–20, 2; and for four years to 1923–24 only interest charges. In respect of 1923–24 there was a profit on working of £17,075, compared with £18,379 in the previous year. Carried forward, £6,458 (compared with £7,410) after meeting loss on exchange of £5,075 (compared with £7,499); reserve accounts (including renewals), £81,854. Gross receipts July 1 to December 31, 1924, £41,829 (decrease £237).

Following is a statement of the capital and loans authorized and issued as of June 30, 1925:

Securities	Authorized	Issued	Balance unissued	Debenture stock redeemed	Outstanding at June 30, 1925
Ordinary stock	£500,000	£120,120	£379,880	....	£120,120
Six per cent first preference stock	600,000	583,850	16,150	....	583,850
Five per cent second preference stock	310,000	293,173	16,827	....	293,173
Six per cent debenture stock (1882)	400,000	400,000	....	£194,550	205,450
Six per cent second debenture stock (1894)	100,000	72,625	27,375	8,662	63,963
Total	1,910,000	1,469,768	440,232	203,212	1,266,556

Following is the capital account as of June 30, 1925:

	£	s.	d.	£	s.	d.
Dr:						
Capital issued at date—						
Six per cent first preference stock				583,850	0	0
Five per cent second preference stock				293,173	0	0
Ordinary stock				120,120	0	0
Debenture stock—						
Six per cent first debenture stock (1882)				205,450	0	0
Six per cent second debenture stock (1894)				63,963	0	0
Balance				10,813	2	4
Total				1,277,369	2	4
Cr.:						
Railway and sundry investments acquired from old company as per last balance sheet	996,793	18	2			
Less cost price of investments sold and applied in redemption of debenture stock	140,436	9	3			
				856,357	8	11

Cr.—Continued.

	£	s.	d.	£	s.	d.
Note investments remaining in names of the trustees—						
£100,039 13s. 6d. 5 per cent war loan (1929–1947), cost	94,235	14	6			
£17676 10s. 11d. sundry colonial and railway (trustee) 4 and 5 per cent; stocks cost	17,766	14	2			
	112,002	8	8			
Capital expenditure to date—						
Expended to June 30, 1924	423,284	10	4			
Less: Amount written off plant	536	4	8			
	422,748	5	8			
Less applied out of redemption of dedebenture stock in reduction	1,736	12	3			
				421,011	13	5
Total				1,277,369	2	4

The balance sheet as of June 30, 1913, is reproduced below:

ASSETS

	£	s.	d.
Capital-account expenditures:			
Purchase of and additions to railway, etc	1,201,413	5	10
Interior unified debt of Uruguay at par value and at $4.70 exchange	268,085	2	1
Cash at banks and in hand:			
London	1,170	4	2
Uruguay	3,859	9	5
Sundry debtors and balances on open account	14,339	6	11
Uruguay Development Co. liquidation account	560	5	2
Debenture-issue account	350	0	0
Stores on hand and in transit	19,489	10	9
Total	1,509,267	4	4

LIABILITIES

	£	s.	d.
Capital paid up	1,452,518	0	0
Sundry creditors and balances	10,624	1	2
Loan from bankers	6,000	0	0
Zanja Honda Colony, suspense account	748	17	4
Reserve accounts	13,000	0	0
Rolling stock renewals fund	8,000	0	0
Insurance fund	4,388	18	4
Balance at credit	13,987	7	6
Total	1,509,267	4	4

Following is the balance sheet as of June 30, 1925:

ASSETS

	£	s.	d.	£	s.	d.
Balance of capital: Overspent, as per separate account				10,813	2	4
Cash at bankers and in hand:						
London	8,226	8	4			
Uruguay	5,069	15	2			
				13,296	3	6
Bills receivable				4,000	0	0
Investments (other than those held by the trustees for the debenture stockholders) at cost				49,319	14	5
Stores on hand and in transit				21,157	14	4

	£	s.	d.	£	s.	d.
Government of Uruguay:						
Guaranty accrued to date	3,556	17	6			
Traffic account	2,076	11	4			
				5,633	8	10
Sundry debtors and balances on open accounts:						
London	1,234	7	7			
Uruguay	5,795	15	0			
				7,030	2	7
				111,250	6	0

NOTE.—The company holds 5,000 £1 shares (fully paid) in Quarahim International Bridge Co. (Ltd.) and certain lands at Zanja Honda, which are together included in the above figure at a nominal value of £5.

LIABILITIES

	£	s.	d.	£	s.	d.
Sundry creditors and balances on open accounts:						
London	6,171	14	4			
Uruguay	4,755	11	8			
				10,927	6	0
Debenture interest accrued:						
Six per cent first debenture stock	506	11	9			
Six per cent second debenture stock	157	14	4			
				664	6	1
Unpaid interest warrants	286	18	1			
Unpaid dividend warrants	138	11	8			
				425	9	9
Reserve fund (including rolling-stock renewals fund now transferred thereto) at June 30, 1924	81,864	8	0			
Zanja Honda Colony suspense account: Realized during year	50	1	8			
				81,914	9	8
Net revenue account: Balance at credit				17,318	14	6
				111,250	6	0

The revenue account for the year ended June 30, 1913, is shown below:

ASSETS

	£	s.	d.
Passengers	15,030	2	10
Baggage	304	18	2
Parcels	1,755	7	8
Goods	50,569	7	3
Livestock	6,271	9	0
Telegrams	777	9	7
Special trains	485	10	8
Sundry receipts	1,757	14	6
Wharfage	215	15	0
Receipts in London: Interest, exchange, transfer fees, etc	517	17	6
Total	77,685	12	2

LIABILITIES

	£	s.	d.
Maintenance of way and works	17,311	15	11
Locomotive expenses	16,129	18	7
Traffic expenses	9,586	17	11
Repairs and renewals of cars	3,610	7	2
Telegraph expenses	579	8	6
General charges	5,585	15	10
Law charges	259	0	6
Agency, bank commission, interest, etc	701	8	11
Balance to net revenue account	23,920	18	10
Total	77,685	12	2

Following is the net revenue account for the year ended June 30, 1913:

ASSETS	£	s.	d.
Balance July 1	343	0	2
Balance revenue account less loss on exchange	23, 920	18	10
Interest on interior debt of Uruguay	10, 723	8	1
Government of Uruguay guaranty	9, 196	17	0
Total	44, 184	4	1

LIABILITIES	£	s.	d.
Interest on first and second debenture stock	27, 267	8	7
Income tax	477	17	2
Depreciation on launch	101	10	10
Amount carried to rolling stock renewals fund	2, 000	0	0
Amount written off debenture issue account	350	0	0
Balance to balance sheet	13, 987	7	6
Total	44, 184	4	1

The revenue account for the years ended June 30, 1924 and 1925, is reproduced below:

Items	1923–24	1924–25			Items	1923–24	1924–25		
EXPENDITURES					RECEIPTS IN URUGUAY				
	£	£	*s.*	*d.*		£	£	*s.*	*d.*
Maintenance of way, works, etc	12, 969	18, 120	10	5	Passengers (including special trains)	11, 680	10, 812	8	9
Locomotive expenses	15, 112	14, 258	10	6	Parcels	2, 086	2, 236	0	3
Traffic expenses	9, 534	9, 328	11	6	Luggage	184	148	7	10
Repairs and renewals of carriages and wagons	8, 445	8, 681	16	8	Goods	46, 806	48, 753	16	7
Telegraph expenses	209	110	8	6	Livestock	11, 746	11, 601	18	1
General charges (including administration in Uruguay and London)	9, 643	9, 922	6	8	Telegrams	717	620	12	8
Law charges, Uruguay and London	469	703	0	4	Wharfage	1, 727	1, 170	19	1
Taxes, superannuation and pension fund, etc	4, 048	4, 621	18	3	Hire of rolling stock	2, 605	2, 337	10	4
Agency, commission, etc	431	431	14	2	Sundry receipts	651	694	4	4
Fire insurance, Uruguay	267	278	4	4	Total	78, 202	78, 375	17	11
Balance carried to net revenue account	17, 075	11, 918	16	7					
Total	78, 202	78, 375	17	11					

The following is the net revenue account for the year ended June 30, 1925:

Cr.:	£	s.	d.	£	s.	d.
Balance at July 1, 1924				6, 458	1	6
Balance of revenue account for year to June 30, 1925, as above	11,918	16	7			
Less exchange loss on remittances	1, 241	15	10			
				10, 677	0	9
Government of Uruguay guaranty to June 30, 1925				15, 964	17	10
Interest on sundry investments held by trustees for debenture-stock holders				5, 811	5	4
Interest on investments held by company				2, 288	0	4
Sundry interest, transfer fees, exchange, etc				224	4	2
Corporation profits tax				4	15	0
Total				41, 428	4	11

Dr.:

	£	s.	d.	£	s.	d.
Interest on first debenture stock (1882) for year to June 30, 1925	12,388	2	7			
Interest on second debenture stock (1894) for year to June 30, 1925	3,865	13	1			
				16,253	15	8
Bridge tolls—Guaranty account				4,299	19	0
Income tax				3,019	11	1
Amount written off plant				536	4	8
Balance carried to balance sheet				17,318	14	6
Total				41,428	4	11

TRAFFIC STATISTICS

The following table shows traffic results:

Items	1912-13	1923-24	1924-25
GENERAL			
Receipts		£78,201 16s. 4d.	£78,375 17s. 11d.
Expenses		£61,127 3s. 0d.	£66,457 1s. 4d.
Profit		£17,074 13s. 4d.	£11,918 16s. 7d.
Percentage of expenses on receipts		78.17	84.79
MILEAGE RESULTS			
Miles of line open to traffic		113	113
Receipts per mile	£687 9s. 8d.	£692, 1s. 0d.	£693, 11s. 10d.
Number of trains	1,054	796	823
Train-miles	129,480	72,195	74,420
Engine-miles	176,318	105,558	111,379
Car-miles	2,372,166	1,362,712	1,399,904
Receipts per train-mile	12s.	£1 1s. 7.97d.	£1 1s. 0.76d.
Expenses per train-mile	8s. 3¾d.	16s. 11.21d.	17s. 10.32d.
Profit per train-mile	3s. 8¼d.	4s. 8.76d.	3s. 2.44d.
PASSENGER TRAFFIC			
Number of passengers	29,332	17,388	16,892
Average per day	80.33	47.64	46.28
Average per train	27.82	54.85	52.30
Passenger mileage	1,279,774	907,252	851,594
Average miles per passenger	43.64	52.18	50.41
Fares earned		£11,436 10s. 3d.	£10,540 11s. 10d.
Average fare per passenger	10s. 3d.	13s. 1.84d.	12s. 5.76d.
Receipts per passenger-mile	2.8d.	3.025d.	2.971d.
Seating capacity utilized per cent		23.44	21.42
FREIGHT TRAFFIC			
Tons of public freight carried		35,045	35,692
Tons of animals carried		15,451	14,771
Total tons of public traffic carried		50,496	50,463
Tons of company's material		1,549	3,098
Total tonnage hauled	94,136	52,045	53,561
Ton-mileage (freight and animals)	6,820,266	3,316,514	3,437,044
Average miles per ton (freight and animals)	72.45	65.68	68.11
Freight earned, public freight		£46,806	£48,754
Freight earned, animals		£11,746	£11,602
Average freight earned per ton of freight		£1 6s. 8.54d.	£1 7s. 3.83d.
Average freight earned, including animals		£1 3s. 2.29d.	£1 3s. 11.05d.
Receipts per ton-mile, freight and animals	1.78d.	4.237d.	4.215d.
Tonnage capacity of wagons utilized per cent		37.16	38.23

OPERATING OFFICIALS AND PURCHASES

The operating officials for the fiscal year ended June 30, 1924, are as follows:

Chairman, Frank Henderson, 48 Parkside, Wimbledon, S. W. 19.
Deputy chairman, Sir Robert Edgcumbe, Quay House, Newquay, Cornwall.
Directors:
 H. G. M. Conybeare, "Ganfield," Delmore, Ingatestone.
 Sir Arthur Holland, Holmhurst, Copse Hill, Wimbledon.
 Follett Holt, 6 Sussex Square, Hyde Park, W. 2.

London office, River Plate House, Finsbury Circus, London, E. C. 2.
Secretary, R. F. Fisher.
General manager, G. W. Teague, Paysandu.
Traffic superintendent, G. Bigot, Paysandu.
Resident engineer, A. W. Bennet, Paysandu.
Accountant, W. J. Bradbury, Paysandu.
Superintendent of shops, J. Wavrunek, Paysandu.
Permanent-way inspector, J. Mathisson, Salto.
Storekeeper, W. Flood, Salto.
Cashier, J. Catalogne, Salto.
Auditor, W. B. Keen.

Purchases, usually by public tender, are made through the London office, River Plate House, Finsbury Circus, London, E. C. 2.

RIGHT OF WAY

Altitude.—The road runs from 58 feet above sea level at Salto to 482 feet at Isla de Cabellos, the highest point on the road.

Gauge.—The gauge is standard, 4 feet 8½ inches.

Curves.—The radius of the sharpest curve on the road is 984 feet. This curve is located at Salto.

Rails.—Rails weighing 56 pounds per yard, in sections 18 to 24 feet in length, are used. Cross-section dimensions of the rail are as follows: Height, 4½ inches; head, 2$\frac{3}{32}$ inches; flange, 4 inches.

Ties.—Ties of uniform size, 2½ by 0.24 by 0.12 meters, of quebracho, jarrah, and steel, spaced 1,100 to the kilometer, are used. The quebracho ties are imported from Argentina, and the jarrah ties from Australia.

Water.—Water is secured from ordinary wells, semiartesian wells, and natural streams. Water stations are located at various distances up to a maximum of 16 miles apart. Tanks are of cast iron and steel plates.

Fuel.—All locomotives are coal burners. Fuel stations are located along the right of way up to a maximum of 16 miles distance apart.

Ballast.—Earth, gravel, and crushed rock are used for ballast, according to the availability of materials. Earth ballast predominates.

Clearance.—The minimum clearance limits on the road are 15 feet 9 inches above top of rail and 7 feet from center of track to either side.

Fences and cattle guards.—Most of the right of way is fenced with galvanized wire strung on quebracho posts. Ample cattle guards of iron gratings are provided.

Maintenance.—The road is in sufficiently good repair to handle the traffic it is required to bear.

Signaling.—Signals are located near the station buildings. These signals, which are of semaphore type, have one arm on each side and are controlled by the station master by direct leverage on the signal itself. Train dispatch and movements are controlled by telegraph.

Bridges.—There are 27 steel bridges in use.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

The motive power and rolling stock in operation for the fiscal year ended June 30, 1925, are indicated below; the locomotives are shown first:

Small switch, 0-6-0 class	3
Side tank, four wheels, coupled, 2-4-0 class	1
Side tank, four wheels, coupled, 4-4-0 class	4
Side tank, six wheels, coupled, 0-6-0 class	2
Side tank, six wheels, coupled, 4-6-0 class	2
Side tank, four wheels, coupled, 4-4-2 class	5
Total	17

The larger engines have cylinders measuring 15½ by 20 inches stroke to 16½ by 22 inches stroke, and the smaller engines have cylinders measuring 9½ by 18 inches stroke to 14 by 20 inches stroke.

These locomotives are predominantly from the Hunslet Engine Co.'s factory, England. Other engines are from factories of Sharp, Stewart & Co., England; Hudswell, Clarke & Co., England; Hawthorn, Leslie & Co., England; and Manning, Wardle & Co., England.

The cars are as follows:

Passenger:	
First class, four-axle	5
Second class, two-axle	4
First class, two-axle	2
Special kitchen, two-axle	3
Official car	1
Total	15
Freight:	
10-ton, open, two-axle	25
Box cars, two-axle, 10-ton	22
Platform cars, four-axle	10
Box cars, four-axle	20
Cattle cars, four-axle	48
Four-ton ballast cars, two-axle	22
Traveling crane	1
Brake vans, four-axle	3
Brake vans, two-axle	4
Box cars, two-axle, eight-ton	59
Platform cars, two-axle	14
Eight-ton, open, two-axle	60
Total	288
Grand total	303

Central screw couplers and side buffers are in use. Couplers are at a height of 3 feet 4 inches from top of rail. There are no Government regulations concerning draft rigging, couplers, and buffers.

REPAIR SHOP

The road has one repair shop, located at Salto, which is equipped with tools, machinery, and foundries sufficient for making ordinary repairs and construction. Foundries are equipped to turn out iron castings up to 4 tons and brass castings up to 400 kilos at each casting. Castings weighing 600 kilos can be handled. An average of 3 locomotives and 90 cars are repaired annually. Following is a list of the principal power-driven machinery and tools:

1 wheel lathe; common two-face plate; 2 inches, height of center.
1 lathe; heavy-work screw cutting; 14½ inches, height of center.
1 drilling machine; sliding table, ⅛ inch to 2 inches.
1 shaping machine; single; 11-inch stroke.
1 planing machine; single tool head; 2 feet 9 inches wide, 3 feet high, 6 feet long.
1 grinding machine; homemade.
1 saw-grinding machine; single stone; 24 inches.
1 screw machine; turret, ½ inch to 1½ inches.
1 slotting machine; circular table; 9-inch stroke.
1 grinder; single stone, 13½ by 2 inches.
1 steam hammer; 2½ hundredweight, 8-inch cylinder, 21-inch stroke.
1 punching and shearing machine; to punch ⅞-inch and shear ¾-inch plate.
1 cupola; homemade.
1 brass furnace; underground; 18 inches inside diameter.
1 steam engine; single horizontal; cylinder 16-inch diameter, 30-inch stroke.

1 wheel lathe; common two-face plate; 2 feet 6 inches, height of centers.
1 grinder; double disk for emery cloth; 12 inches diameter.
1 turret lathe; capstan No. 4; 6½ inches, height of center.
1 lathe; screw cutting; 9½ inches, height of center.
1 lathe; screw cutting; 10½ inches, height of center.
1 lathe; screw cutting; 6½ inches, height of center.
1 shaping machine; single; 18-inch stroke.
1 drilling machine; radial wall; 4-foot 6-inch radius.
1 drilling machine; sliding table; ¼ inch to 1 inch.
1 tool grinder; wheels 2¼ inches by 12 inches diameter.
2 blacksmiths' blowers; fan; 14-inch diameter.
1 welding machine; Wilson plastic arc; 35 volts, 150 amperes.
1 band-saw sharpener; automatic feed; takes saws up to 1½ inches.
1 plate bender; hand; ³⁄₁₆-inch plate.
1 plate bender; made in Salto, three rollers, hand; ½-inch plate.
1 rail-punching machine; H. Pels.
1 hydraulic wheel press; hand; 12-inch ram, 24-inch stroke.
1 wood-mortising and boring machine; 6-inch stroke.
1 general joiner; Ransome's patent; takes work 3½ inches thick by 12 inches wide.
1 band saw; Ransome's patent; takes work 12 inches thick.
1 circular saw; auto-feeding; takes work from 4 inches to 16 inches.
1 wood-planing machine; under and over; work 18 inches wide, 9 inches thick.

MIDLAND URUGUAY RAILWAY CO. (LTD.)

SURVEY OF DEVELOPMENT

The history of this road dates from February 9, 1887, when a concession was granted by the Uruguayan Government for the construction of a railway to run from Paso de los Toros to Salto, a distance of 317 kilometers. On July 2, 1887, the Midland Uruguay Railway Co. (Ltd.) was registered in England to acquire this concession. The Government guaranteed, for a term of 40 years from the date of concession, 7 per cent per annum on a capital of £5,000 per kilometer. Under the scheme of arrangement of Uruguayan national liabilities, formulated in 1891, the guaranty for the remaining period of the concession was reduced from 7 to 3½ per cent, payable quarterly in gold. Net earnings in each year ended December 31 up to 1½ per cent per annum on the guaranteed capital are to be retained by the company; net earnings from 1½ to 5 per cent on the guaranteed capital are to be applied in reduction of the guaranty payable by the State; when the net earnings exceed 5 per cent the excess up to 6 per cent is to be retained by the company; net earnings in excess of 6 per cent are to be applied wholly in repayment of sums advanced under the guaranty. For the service of the consolidated debt and the railway guaranties the Government has hypothecated 45 per cent of the gross receipts of the customhouses of the Republic, while, should these revenues prove insufficient, the deficiency is to be made up from other sources of revenue; on the amount so provided the interest of the consolidated debt forms a first charge, the railway guaranties ranking next. The Government has power to purchase the line after 25 years from the commencement of its working "at a just estimate of its value," with 20 per cent profit.

The line was opened from Paso de los Toros to Merinos on August 15, 1889, to Paysandu on April 17, 1890, and to Salto on November 1, 1890. On July 6, 1907, the company obtained a concession from the Government of Uruguay for an extension of the line from Algorta to Fray Bentos, a distance of 139 kilometers. Under this concession the Government guarantees for a period of 35 years from the date of the concession interest of 3½ per cent on £5,000 per kilometer of line, payable from the date of the opening of the line in sections; the company is to retain the net earnings up to an amount equal to 6 per cent on a capital of £5,000 per kilometer, earnings between 1½ per cent and 5 per cent reducing the amount payable by the Government under the guaranty, while when the earnings exceed 6 per cent the excess up to 8 per cent is divisible between the Government and the company in the proportions of two-thirds to the Government and one-third to the company. In the event of the profits exceeding 8 per cent per annum on the guaranteed capital the Government may elect between (1) intervening in the tariffs until the net results upon the guaranteed capital are reduced to 8 per cent, or (2) receiving the said excess—while if, on account of the reduction in the tariffs, the profits from the working should be less than 8 per cent per annum upon the guaranteed capital, the Government binds itself to make up the shortage. The line is to become the property of the Government, without compensation, at the expiration of 90 years from the date of the opening for public traffic—July 1, 1911—while it may be taken over after 25 years' working at the price of £5,000 per kilometer plus 20 per cent profit.

This branch was opened to traffic from Algorta to kilometer 53 on July 30, 1910, kilometer 105 on February 28, 1911, and to Fray Bentos on August 17, 1911.

On November 8, 1911, the company secured another concession for the construction of a railway from Tres Arboles to Piedra Sola, a distance of 57 kilometers. The company transferred this concession to the Midland Uruguay Extension Railway Co., which was registered in England on December 6, 1911, to acquire this particular concession valid for 90 years. The line was opened to traffic on April 10, 1913. Under this concession the Uruguayan Government guarantees, for a term of 35 years, interest at the rate of 3½ per cent per annum on a capital of £5,000 per kilometer of line ready and opened for public service, and provision is made for the retention by the company of net earnings of the railway up to an amount equal to 1½ per cent on the same capitalization before any reduction can be made in the guaranty by the Government; net earnings from 1½ to 5 per cent on the guaranteed capital are to be applied to reduction of the guaranty payable by the State; when the net earnings exceed 5 per cent the excess up to 6 per cent is to be retained by the company; net earnings in excess of 6 per cent and up to 8 per cent are divisible between the Government and the company in the proportion of two-thirds to the former and one-third to the latter; net earnings in excess of 8 per cent are to be applied, together with the two-thirds of net earnings between 6 per cent and 8 per cent, wholly in repayment of sums advanced under the guaranty, but the Government may elect to intervene for the reduction of tariffs. The line is to become the property of the Government, without compensation, at the expiration of 90 years from the date of opening for public traffic—and may be taken over after 25 years at the price of £5,000 per kilometer, plus 20 per cent profit. The Midland Uruguay Railway Co. (Ltd.), in consideration of the allotment to it of £99,993 fully paid £1 shares of the extension company and the payment of £175,000 in cash, undertook to transfer the concession, to construct the line, to guarantee unconditionally an issue of £200,000 of 5 per cent debenture stock of the extension company, and to work and maintain the line, retaining the profits but paying to the extension company such a sum as shall, with the Government guaranty, be sufficient to cover its debenture interest and administration and general expenses, including sums payable to the Government under the concession.

FINANCES

According to the Stock Exchange Yearbook for 1925, the authorized share capital of the Midland Uruguay Extension Railway Co. (Ltd.) is £100,000 in shares of £1, all of which, except seven shares, has been, as stated above, allotted to the Midland Uruguay Railway Co. (Ltd.). In December, 1911, £200,000 5 per cent debenture stock of the extension company, guaranteed as to principal and interest by the controlling company, was issued at the price of 92 per cent. Interest on the debenture stock is payable May 1 and November 1, and the principal is repayable at par May 1, 1960, but the stock is redeemable at par plus accrued interest at any time on six months' notice. The company may, with the consent of the Midland Uruguay Railway Co., create and issue, for the purpose of extensions or other railways, like stock ranking pari passu with the current issue to an amount not exceeding £5,000 per mile of extensions or other railways constructed or acquired, but otherwise no further issue of debenture stock may be made. The trustee is the Premier Investment Trust.

Accounts to June 30, submitted November, Government guaranty and payments by Midland Uruguay Railway Co. (Ltd.) are punctually received. Sundry creditors on June 30, 1924, £1,209. Cash, £285; sundry debtors, £84. Discount and expenses of debenture issue, £25,000.

Voting power, one vote for each share. Director's qualification, 100 shares. Transfer form, common; fee, 2s. 6d.; debenture stock is transferable in amounts of £1 and multiples. Fee for registration of probate, power of attorney, etc., 2s. 6d. The debenture stock is quoted in the official list; latest price, 48.

According to the Stock Exchange Yearbook for 1925, the finances of the Midland Uruguay Railway Co. (Ltd.) are as follows:

Authorized, issued, and paid-up capital stock, £600,000. Authorized to be raised by debenture stocks, £2,150,000; issued, £1,850,000; outstanding, £1,606,750; further £50,000 debenture stock issued as collateral security for bankers' loans as and when required. Debit to capital at June 30, 1924, £11,437, after taking into account discount and expenses of issue of debenture stocks, £104,744. Company is contingently liable (1) to Uruguayan Government in respect of past guaranty advances repayable out of future net earnings in excess of 6 per cent on £5,000 per kilometer on 514½ kilometers of lines, and (2) in respect of principal and interest of debenture stock of extension company, as stated above.

Six hundred thousand pounds sterling capital stock, the total authorized, issued in July, 1887, through Messrs. Anthony Gibbs & Sons, 22 Bishopsgate, E. C. 2, at par, in shares of £10, and subsequently converted into stock. Quoted in the official list; latest price, 4½.

Four hundred and forty-nine thousand eight hundred and thirty-two pounds sterling 5 per cent prior lien debenture stock, outstanding balance of £600,000 authorized and issued in November, 1908, at 90 per cent, secured by a first floating charge on the entire undertaking of the company. The interest dates are February 1 and August 1, and the trust deed contains provisions for the redemption of the stock by the application of an annual cumulative sinking fund, commencing in the year ending June 30, 1912, to be applied to purchases in the market at a price not exceeding par and accrued interest, or to drawings at par, the whole issue to be redeemed by June 30, 1947. The company may not, without the authority of an extraordinary resolution of the prior lien debenture stockholders, create any mortgage or charge on its assets ranking pari passu with or in priority to the stock. Trustees: Consolidated Trust Co. (Ltd.). Quoted in the official list; latest price, 80.

One million one hundred and fifty-six thousand nine hundred and eighteen pounds sterling 5 per cent debenture stock, outstanding balance of £1,250,000 (part of a total authorized of £1,350,000), of which £1,131,375 was issued in July, 1887, through Messrs. Antony Gibbs & Sons, 22, Bishopsgate, E. C. 2, at 96 per cent, and a further amount of £118,625 privately in 1913. Interest is payable May 1 and November 1 (as to payments made, see below), and should the Government purchase the line the debenture stock is to be repaid at par. (As to sinking fund, see below.) The stock is secured, now subject to the prior lien debenture stock, as a floating charge on the undertaking; trustees, Right Honorable Lord Farrer, Right Honorable Viscount St. Davids. The stock was originally issued to bear 6 per cent interest, but schemes of arrangement were agreed to by the holders in May, 1893, November, 1898, October, 1902, October, 1907, and, in connection with the concession for the line to Fray Bentos, in July, 1908, when it was agreed that the interest on the debenture stock should be permanently reduced to 5 per cent per annum, but that net profits (after meeting prior lien debenture stock interest and sinking fund, and the interest on the existing debenture stock) are to be set aside up to a sum equal to 1 per cent of the total of debenture stock issued, plus a sum equal to the interest for the last preceding year on the amount of the stock for the time being redeemed, to form an A sinking fund, while profits exceeding the contribution required for the A sinking fund were, up to the sum of £5,898, to be set aside for a further B sinking fund, such funds to be annually applied in redeeming debenture stock of this issue by purchase in the market at a price not exceeding par, or by drawings at par; moreover, the charge for securing the existing debenture stock was extended to cover the new extension, but on the other hand the capital required for constructing the extension (£600,000) was raised in 5 per cent prior lien debenture stock, ranking as a first charge on the existing line and also on the extension. In 1915 the authorized amount of this stock was raised from £1,250,000 to £1,350,000; £50,000 has been issued as collateral security, and the remaining £50,000 of the debenture stock can be issued only with the approval of the two directors representing the debenture stockholders on the board, who may also, at their discretion, direct that surplus profits shall be applied to renewals or betterments before providing for the A and B sinking funds.

Under the schemes of arrangement only 4 per cent interest was paid down to and inclusive of 1901–2, but for 1902–3 and 1903–4 there was an excess distribution of three-fourths of 1 per cent each year (in addition to the then fixed rate of — per cent) and for 1904–5 and 1905–6 of 1 per cent. For 1906–7 the stockholders received £4 13s. 4d. per cent, and for each of the 17 years to 1923–24 the full rate of 5 per cent.

Quoted in the official list; latest price, 30.

None issued. Six per cent second-debenture stock for £200,000 authorized.

The accounts are made up annually to June 30 and submitted in November. The last dividend paid on the ordinary stock was 1½ per cent in December, 1896; as to the payments made on the debenture stock, see above. In 1912–13 there was a profit on working of £38,989; in 1913–14, of £19,142; in 1914–15, of £11,191; in 1915–16, of £27,033; in 1916–17, of £29,514; in 1917–18, of £20,205; in 1918–19, of £28,916; in 1919–20, of £30,360; in 1920–21, of £22,435; in 1921–22, of £27,973; in 1922–23, of £34,358; in 1923–24, of £30,477. In respect of 1923–24 the total net income, including the Government guaranty, amounted to £111,178, and after meeting fixed charges, taxes, and a loss on exchange of £8,065 there was a surplus of £871 (compared with a deficiency of £174 for 1922–23), which was transferred to renewals fund, increasing that fund to £64,553. General reserve, £20,307. Gross receipts, July 1 to December 31, 1924, £97,554 (increase, £2,566).

Voting power, one vote for each £10 of ordinary stock if not less than £50 is held. Director's qualification, £1,000 of ordinary stock, excepting in the case of the two directors representing the 5 per cent debenture stock holders. Transfer form, common; fee, 2s. 6d. per deed; the various stocks are transferable in amounts and multiples of £1, a separate deed being required for each class. Fee for registration of probate, power of attorney, etc., 2s. 6d. Telephone number, 1101 London Wall.

At the present time the company is controlled by the Central Uruguay Railway of Montevideo (Ltd.) through control secured by that company of the Uruguay Railway Co. The road has approximately 547 kilometers of track in operation and has no new projects in view.

The road is composed of the following lines:

	Kilometers
Rio Negro-Salto (main line)	317
Algorta-Fray Bentos (branch line)	139
Tres Arboles-Piedra Sola (branch)	57
Yard track and sidings	34
Total	547

Following is a statement of the capital account as of June 30, 1913:

	£	s.	d.
Dr.:			
Expenditures to June 30	2,348,488	4	6
Discount and commission and expenses of issue of £600,000 prior lien debenture	89,000	0	0
Expenditures—			
Extension to Fray Bentos	8,039	18	3
Main-line addition—			
Plant	850	18	0
Rolling stock	9,552	10	9
Discount and commission of issue debenture stock	15,743	18	3
	2,471,675	9	9
Less debited revenue account in previous years	20,921	8	8
Total	2,450,754	1	1
Cr.:			
Capital—			
Ordinary stock	600,000	0	0
5 per cent prior lien debenture (less amount redeemed)	586,330	0	0
5 per cent debenture stock (less amount redeemed and pledged)	1,205,925	0	0
5 per cent prior lien debenture stock redeemed (plus profit)	13,670	0	0
5 per cent debenture stock redeemed (plus profit)	44,075	0	0
Balance to balance sheet	754	1	1
Total	2,450,754	1	1

The receipts and expenditures on capital account to June 30, 1925, are shown below:

	£	s.	d.	£	s.	d.
Dr.:						
Expenditure to June 30, 1924	2,377,614	2	4			
Discount and commission and expenses of issue of £600,000 5 per cent prior-lien debenture stock and discount on issue of £70,538 5 per cent debenture stock	104,733	18	3			
				2,482,358	0	7
Expenditure during the year—						
Electric lighting installation, coach D3	187	12	6			
Motor and pump, Bellaco	147	12	7			
Purchase of land, Dayman	256	2	10			
				591	7	11
				2,482,949	8	6

Dr.—Continued.

	£	s.	d.	£	s.	d.
Less debenture stock redemption accounts—						
In respect of stock redeemed and canceled to date—						
5 per cent prior-lien debenture stock	171,947	0	0			
5 per cent debenture stock	93,082	0	0			
				265,029	0	0
				2,217,920	8	6
Less amount debited to revenue account in previous years				20,921	8	8
Total				2,196,998	19	10

Cr.:

		£	s.	d.
Capital issued—				
Ordinary stock		600,000	0	0
5 per cent prior-lien debenture stock	£600,000			
Less redeemed and canceled	171,947			
		428,053	0	0
5 per cent debenture stock	1,300,000			
Less issued as collateral security	50,000			
	1,250,000			
Less redeemed and canceled	93,082			
		1,156,918	0	0
Balance carried to balance sheet		12,027	19	10
Total		2,196,998	19	10

Following is the revenue account for the year ended June 30, 1913:

EXPENDITURES	£	s.	d.
Maintenance ways and works	26,855	18	0
Locomotive power	32,225	17	10
Repairs and renewals of cars	3,926	1	4
Traffic expenses	21,549	2	4
General charges	12,162	18	1
Telegraph expenses	712	17	1
Balance to net profit account	38,989	11	11
Total	136,422	6	7

RECEIPTS	£	s.	d.
Passengers	37,834	15	2
Parcels	5,345	13	11
Baggage	746	17	6
Goods	63,859	12	4
Animals	19,725	9	8
Telegrams	1,147	12	11
Wharfage, etc	3,291	12	10
Hire of rolling stock	4,088	8	4
Sundry receipts	287	1	5
Receipts in London	95	2	6
Total	136,422	6	7

The revenue account for the year ended June 30, 1925, is reproduced on the following page:

RECEIPTS IN URUGUAY

	£	s.	d.
Passengers (including beds and special trains)	46,527	16	8
Parcels	10,660	16	9
Luggage	715	16	6
Goods	85,918	6	3
Animals	58,611	13	3
Telegrams	1,449	12	6
Wharfage, rents, etc	852	15	5
Hire of rolling stock, etc	2,649	17	5
Sundry receipts	573	3	2
Total	207,959	17	11

EXPENDITURES

	£	s.	d.
Maintenance of permanent way and works	60,227	2	6
Locomotive expenses	45,262	15	6
Carriage and wagon expenses	14,704	9	11
Traffic expenses	27,599	6	9
General charges	22,970	17	10
Telegraph expenses	915	3	8
	177,679	16	2
Balance carried to net revenue account	30,280	1	9
Total	207,959	17	11

The following is the net revenue account as of June 30, 1913:

EXPENDITURES

	£	s.	d.
Interest on prior lien debenture stock	29,520	13	5
Amount set aside for redemption prior lien debenture stock	6,979	6	7
Interest on debenture stock	57,598	16	8
Amount set aside for redemption debenture stock	13,684	18	3
Income tax	358	5	3
Extension Piedra Sola (agreement)	123	12	10
Interest on loans	1,615	11	9
Transfer to special reserves	4,000	0	0
Balance	278	8	0
Total	114,159	12	9

RECEIPTS

	£	s.	d.
Balance down (less £8,064 11s. 6d. loss on exchange in 1923–24)	38,989	11	11
Balance last year	4,278	8	0
Guaranty received	48,796	19	3
Guaranty in suspense	2,109	5	8
Guaranty accrued	19,985	7	11
Total	114,159	12	9

The net revenue account as of June 30, 1925, is shown below:

Dr.:

	£	s.	d.	£	s.	d.
Interest on prior lien debenture stock from July 1, 1924, to June 30, 1925, at 5 per cent per annum	21,911	14	1			
Amount set aside for redemption of 5 per cent prior lien debenture stock in accordance with trust deed	14,588	5	11			
				36,500	0	0
Interest on debenture stock from July 1, 1924, to June 30, 1925, at 5 per cent per annum				57,845	18	0

Dr.—Continued.	£	s.	d.
Extension to Piedra Sola—working-agreement account	331	9	1
Income tax	4,021	12	3
Transferred to renewals reserve account	10,092	10	4
Total	108,791	9	8

Cr.:	£	s.	d.	£	s.	d.
Balance of revenue brought forward	30,280	1	9			
Less loss in exchange	2,141	11	5			
				28,138	10	4
Government of Uruguay—						
Guaranty received	57,322	19	8			
Guaranty in suspense	2,644	1	4			
Guaranty accrued to June 30, 1925 (since received)	19,989	0	4			
				79,956	1	4
Interest, etc				646	13	0
Transfer fees				50	5	0
Total				108,791	9	8

Following is the balance sheet at June 30, 1913:

Dr.:	£	s.	d.
Sundry creditors and credit balances	16,676	19	11
Debenture stock interest accrued	22,264	11	9
Unpaid interest warrants	466	6	11
Reserves (general renewals, etc.)	49,988	11	0
Prior lien debenture service fund for redemption of prior lien debenture stock	74	14	6
Debenture service fund "A" for redemption of debenture stock	13,719	14	5
Revenue account, balance	278	8	0
Total	103,469	6	6

Cr..	£	s.	d.
Capital account balance	754	1	1
Cash	18,406	7	3
Bills receivable	5,525	12	6
Stores	33,059	11	0
Sundry debtors and debit balances	4,489	1	10
Investments at cost	2,262	0	11
Furniture	333	18	2
Government of Uruguay—			
Guaranty accrued	19,985	7	11
Guaranty in suspense	2,109	5	8
Freight account	3,329	7	7
Midland Uruguay Extension Railway Co. (Ltd.)—Expenditures less amount received in accordance with agreement	13,214	12	7
Total	103,469	6	6

The balance sheet at June 30, 1925, is reproduced below:

Dr.:	£	s.	d.	£	s.	d.
Sundry creditors and credit balances—						
In London	18,315	13	1			
In Uruguay	10,735	19	11			
				29,051	13	0
Debenture stock interest accrued—						
5 per cent prior lien debenture stock	8,917	15	5			
5 per cent debenture stock	9,640	19	8			
				18,558	15	1
Unpaid interest warrants				218	4	6

	£	s.	d.	£	s.	d.
Dr.—Continued.						
Reserve accounts—						
General	20,307	0	6			
Renewals, etc	74,645	6	8			
				94,952	7	2
Total				142,780	19	9
Cr.:						
Capital account—Balance				12,027	19	10
Cash at bankers and in hand—						
In London	8,658	19	8			
In Uruguay	13,378	10	5			
				22,037	10	1
Stores—						
In Uruguay	38,380	0	1			
In transit	8,523	19	9			
				46,903	19	10
Sundry debtors and debit balances—						
In London	1,825	4	2			
In Uruguay	13,064	8	2			
				14,889	12	4
Government of Uruguay—						
Guaranty accrued to date (since received)	19,989	0	4			
Guaranty in suspense	2,644	1	4			
Freight account	5,125	3	9			
				27,758	5	5
5 per cent prior lien debenture stock service fund for redemption of 5 per cent prior lien debenture stock—						
Cost of £171,947 prior lien debenture stock, redeemed and canceled	139,962	0	7			
Less contributions from revenue account to date	136,715	14	6			
	3,246	6	1			
5 per cent debenture stock service fund "A" for redemption of 5 per cent debenture stock—						
Cost of £93,082 debenture stock redeemed and canceled	67,518	16	11			
Less contributions from revenue account to date	67,518	6	8			
					10	3
Midland Uruguay Extension Railway Co. (Ltd.)—99,993 ordinary shares of £1 each, fully paid, allotted in accordance with terms of agreement for transfer of concession and construction of line, taken at the amount of the expenditure, viz	190,916	15	11			
Less the amount received from the Extension Company under the agreement	175,000	0	0			
				15,916	15	11
Total				142,780	19	9

NOTE.—The company is under contingent liability as follows: (1) To the Uruguayan Government in respect of past guaranty advances payable by the company and the Midland Uruguay Extension Railway Co. out of future net earnings in excess of 6 per cent on £5,000 per kilometer on 514⅛ kilometers of lines, in accordance with the terms of the concessions and guaranty convention. (2) In respect of the principal and interest of £200,000 5 per cent debenture stock (redeemable 1960) of the Extension Company, in accordance with agreements of December 11, 1911, and June 25, 1913, with that company.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the fiscal year ended June 30, 1925, were as follows:

General manager, G. W. Teague.
Chief accountant, W. J. Bradbury.
Resident engineer, A. W. Bennet.
Superintendent of shops, J. Wavrunek.
Traffic superintendent, G. Bigot.
Montevideo representative, Eduardo Traibel.

Purchases are usually made through the London office and generally by public tender. Communications should be addressed to George R. Cable, secretary, River Plate House, Finsbury Circus, London, E. C. 2.

RIGHT OF WAY

Altitude.—The road runs from 43 to 619 feet above sea level.

Gauge.—The gauge of the road is 4 feet 8½ inches.

Curves.—The radius of the minimum curve is 984 feet.

Ballast.—Earth, gravel, and crushed rock are used for ballast, according to the location and availability of materials. Earth ballast predominates.

Ties.—The ties are made of quebracho, jarrah (hardwood), and steel. They are 2½ by 0.24 by 0.12 meters and are placed 1,100 to the kilometer. Quebracho ties are imported from Argentina and jarrah ties from Australia.

Rails.—The weights and dimensions of the rails used are as follows: First—weight, 58 pounds; height, 4⅝ inches; tread, 2¼ inches; base, 3⅞ inches. Second—Weight, 60 pounds; height, 4$\frac{13}{32}$ inches; tread, 2$\frac{7}{32}$ inches; base, 3⅞ inches. Sections—18 to 20 feet.

Water.—Water is obtained from wells and streams. Water stations are located approximately 30 miles apart. The water tanks are made of cast iron and steel plates.

Fuel.—All locomotives are coal burners.

Signaling equipment.—Signals are placed near the stations and are worked by direct levers, except in the case of a few more important stations where the signals are placed at a greater distance. Train dispatch and movements are controlled by telegraph.

Loading and clearance.—Loading capacity is limited to packages 35 feet long by 9 feet 6 inches wide by 11 feet high, while the maximum weight that can be carried in a single car is 30 tons. The clearance on the road is 4.8 meters above top of rail and 2 meters from center line of track.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate as heavy traffic as they were designed to carry.

Bridges.—There are 43 bridges, all of steel, the types varying in accordance with the length of span.

Tunnels.—There are no tunnels in use on the road.

Fences and cattle guards.—Most of the right of way is fenced with posts of nandubay wood and galvanized wire. Ample cattle guards of iron gratings are provided.

MOTIVE POWER AND ROLLING STOCK

The locomotives in use on the road for the fiscal year ended June 30, 1925, were as follows:

Small switch, 0–4–0 class	2
Large switch, 2–6–0 class	2
6 wheels, coupled, 2–6–0 class	16
4 wheels, coupled, 4–4–0 class	2
Total	22

The larger engines have cylinders measuring 16 by 24 inches stroke to 17 by 24 inches stroke, and the smaller engines from 10 to 16 inches stroke to 15 by 20 inches stroke. The locomotives are all of British manufacture.

The rolling stock is shown below:

Composite, two-axle	3
Second class, two-axle	2
First class, four-axle	4
Second class, four-axle	2
Composite, four-axle	3
Dining, four-axle	2
Special kitchen, two-axle	3
First-class sleepers	1
Official cars	3
8-ton, open, two-axle	74
10-ton, open, two-axle	70
Box cars, two-axle	80
Platform cars, four-axle	18
Box cars, four-axle	28
Cattle cars, four-axle (fitted with double floor for carrying sheep)	110
16-ton, open, four-axle	10
Water tanks	3
Traveling cranes	1
30-ton, open, four-axle	64
Brake vans, four-axle	4
Brake vans, two-axle	11
Special cars (meat, two-axle)	4
Total	500

Central screw couplers and side buffers are used. The couplers are at a height of 3 feet 4 inches above top of rail. There are no Government regulations concerning draft rigging, couplers, and buffers.

REPAIR SHOPS

There is one repair shop in Paysandu equipped for ordinary repairs and construction. The shop is able to handle iron castings up to 5½ tons and brass castings up to 1½ tons. On an average, 4 locomotives and about 120 cars are repaired annually. The following is a list of the principal power-driven machines and tools:

2 wheel lathes; common two-face plate.
5 lathes; various; from centers 6 to 19 inches above bed.
3 drilling machines; two vertical and one radial; radius of spindle 6 feet 6 inches.
2 shaping machines; one double head; 12-inch and 18-inch stroke.
1 planing machine; sliding table and double tool head; 2 feet 6 inches wide, 2 feet high, 7 inches long.
1 small sensitive drilling machine; vertical; 1/16 inch to ½ inch.
1 grinding and lapping machine; Boyer & Peacock (patent); eccentric motion ½ inch, stroke 8½ inches, travel of table 50 inches.
1 saw-grinding machine; single stone; 9-inch-diameter wheel.
1 screw machine; turret No. 4; ½ inch to 1½ inches.
1 general joiner; for planing, sawing, drilling, tongueing, grooving, morticing, etc.
1 band-saw mill; 18-foot by 1½-inch saw.
1 circular saw; to saw up to 12 inches.
1 wood-turning lathe; 10-inch center.
1 slotting machine; 12-inch stroke.
1 double boring machine; J. W. Harker's patent; 2¼-inch mandrills, 12½-inch centers.
1 grinder; double wheel; No. 3.
1 steam hammer; Pollock, Macnab & Highgate; 1½ hundredweight, 6-inch cylinder, 14-inch stroke.
1 punching and shearing machine; to punch ⅞-inch hole and shear ¾-inch plate.
1 cupola with receiver; Jones, Burton & Co.; No. 3.

1 brass furnace; Fletcher's patent; 18 inches inside diameter.
1 waste-washing plant; Industrial Waste Eliminators (Ltd.); No. 3.
1 steam engine; compound horizontal; 8-inch and 12¾-inch cylinders by 14-inch stroke.
1 hydraulic wheel press; Tangyes (Ltd.); 200 tons, 12-inch ram, 18-inch stroke.
1 plate bending machine; three rollers; 10-inch diameter, 5-foot rollers.
1 blower; Root's patent; No. 1.
4 Smith's hearths; Alldays & Onions, A–80; 4 feet by 4 feet by 11 inches.

The following is a table showing various items of interest connected with the road:

Items	1919–20	1920–21	1921–22	1922–23	1923–24
Number of passengers carried	83, 017	81, 790	57, 692	57, 075	56, 182
Total tons of freight moved	120, 265	92, 111	68, 136	71, 598	79, 042
Number of cattle transported	----------	----------	73, 314	179, 035	164, 000
Number of sheep moved	----------	----------	73, 143	110, 346	161, 000
Receipts per mile of line	£762	£643	£530	£621	£637
Gross receipts	£243, 627	£205, 692	£169, 468	£198, 386	£198, 334
Working expenses	£213, 267	£183, 257	£141, 495	£163, 976	£163, 976
Net profit	£30, 360	£22, 435	£27, 973	£34, 410	£34, 358

URUGUAY NORTHERN RAILWAY

SURVEY OF DEVELOPMENT

The history of this road dates from a concession granted on September 14, 1885, by the Government for the construction of a railway to run from Cabellos to San Eugenio, a distance of 114 kilometers. On November 1, 1887, the above company was registered in England to acquire this concession, which was transferred under Government authorization on October 28 of the same year. The Government guaranteed, for a period of 40 years, interest at the rate of 7 per cent per annum on £5,000 per kilometer, making the total amount of guaranteed interest £39,970 per annum. The road was opened to traffic from Cabellos to Cuaro on September 17, 1890, and from San Eugenio on April 17, 1891.

Under the scheme of arrangement of Uruguayan national liabilities, formulated in 1891, the guaranty for the remaining period of the concession was reduced from 7 to 3½ per cent. Net earnings in each year ended December 31, up to 1½ per cent per annum on the guaranteed capital, are to be retained by the company; net earnings from 1½ to 5 per cent on the guaranteed capital are to be applied to reduction of the guaranty payable by the State; when the net earnings exceed 5 per cent the excess up to 6 per cent is to be retained by the company; net earnings in excess of 6 per cent are to be applied in repayment of sums advanced under the guaranty. For the service of the consolidated debt and the railway guaranties, the Government has hypothecated 45 per cent of the gross receipts of the customhouses of the Republic, while, should these revenues prove insufficient, the deficiency is to be made up from other sources of revenue; on the amount so provided the interest of the consolidated debt forms a first charge, the railway guaranties ranking next. The guaranty is payable in gold. Power is reserved to the Government to purchase the railway after 25 years from its commencing to work "at a fair valuation plus 20 per cent;" but if not so purchased the line belongs to the company in perpetuity.

The company is controlled by the Uruguay Railway Co., which, in turn, is controlled by the Central Uruguay Railway Co. of Montevideo (Ltd.).

At the present time the company has 114.2 kilometers of track in operation and has no projects for further extension.

FINANCES

According to the Stock Exchange Yearbook for 1925, the finances of the road are as follows:

Authorized, issued, and paid-up share capital, £350,000. Borrowing powers, £534,400; exercised, £519,400; outstanding, £498,402. Credit to capital at June 30, 1924, £11,052.

£100,000 ordinary shares of £20, issued credited fully paid. Authorized £100,000.

£250,000 7 per cent cumulative preferred stock, with further participation to the extent of one-half of surplus profits after 7 per cent in any year on ordinary, and priority for capital without further participation; issued as £20 shares (and subsequently converted into stock) in May, 1889, through J. Henry Schroder & Co., 145 Leadenhall Street, London, E. C. 3. Authorized, £250,000. Arrears of dividend at June 30, 1924, £501,673. Latest price in official list, 6.

£49,002 5 per cent prior lien, debenture stock, issued for interest on perpetual debenture stock below; £31,002 in 1897, 1898, and 1899, £8,000 in 1908, and £10,000 in 1910. Authorized, £60,000; balance held in trust for company. Interest February 1 and August 1. Redeemable at 105—at any time on six months' notice from company—in event of liquidation, or if Government acquires railway. Secured by trust deed as first charge on guaranty, properties, and assets; trustees, Bank of London & South America (Ltd.).

£449,400 perpetual debenture stock, issued at 90 in June, 1889, by J. Henry Schroder & Co., 145 Leadenhall Street, E. C. 3. Authorized, £449,400. Interest January 1 and July 1 (see below), secured by trust deed, subject to prior lien debenture stock, as floating charge on guaranty and undertaking; trustees, Baron B. Schroder, F. C. Tiarks.

Originally carried 5 per cent interest, and will be restored to that rate when company shall have repaid to Uruguayan Government all sums received under guaranty; in the meantime interest is reduced as from January 1, 1892, to 3½ per cent per annum, to be increased each year by two-thirds of net earnings up to 1½ per cent on capitalization of £5,000 per kilometer. (Amount available from net earnings is distributed with January 1 payment.) Recent total payments: 1916–17, £4 2s. 3d.; 1917–18, £4 7d.; 1918–19, £4 5s. 1d.; 1919–20, £4 11s. 5d.; 1920–21, £3 10s.; 1921–22, £3 19s. 7d.; 1922–23, £3 19s. 10d.; 1923–24, £3 18s. 4d. Latest price in official list, 24xd.

None with 6 per cent second debenture stock for £10,000 has been redeemed and is held in trust for the public company. Authorized, £25,000.

Accounts to June 30, submitted October or November; Government guaranty is duly met. As to payments on debenture stock, see above. Dividends on preferred: 1912–13, 2 per cent; two years to 1914–15, nil; 1915–16, 2; two years to 1917–18, 1; 1918–19, 3; 1919–20, 2; two years to 1921–22, nil; two years to 1923–24, 1½; arrears at June 30, 1924, £501,673. Carried forward, £521. Gross earnings five months to November 30, 1924, £12,884 (increase, £247).

Voting, one vote per £20 ordinary or preferred capital. Director's qualification, £500 preferred stock. Transfer form, common (separate deed each security); fee, 2s. 6d.; all classes stock transferable in multiples of £1. Fee for registration of probate, power of attorney, etc., 2s. 6d. Telephone number: 1101 London Wall.

Following is the balance sheet of the Uruguay Northern Railway as of June 30, 1913:

ASSETS

	£	s.	d.
Cash:			
In Uruguay	2,918	1	2
In London	3,291	0	1
£5,000 5 per cent war loan, 1929–1947, at cost		--	--
Loan against security	9,900	0	0
Government of Uruguay:			
Guaranty accrued	4,708	16	2
Guaranty in suspense	28	0	11
Freight account	377	9	6
Bills receivable	7,312	11	1
Sundry debtors	1,389	6	11
Stores, in Uruguay and in transit	6,804	10	6
Total assets	36,729	16	4

LIABILITIES

	£	s.	d.
Capital account	11,168	17	9
Sundry creditors	2,964	16	2
Debenture interest accrued	13,741	17	4
Unpaid warrants	165	7	2
Net revenue balance	8,688	17	11
Total liabilities	36,729	16	4

The following is a comparative table of the road's operation for the fiscal years indicated:

Items	1912–13			1924–25			Items	1912–13			1924–25		
Dr.	£	s.	d.	£	s.	d.	Cr.	£	s.	d.	£	s.	d.
As per last account	833,184	0	6	837,350	5	8	7 per cent cumulative preferred stock	350,000	0	0	250,000	0	0
For year to June 30	449	1	9	----------			Ordinary shares of £20 each				100,000	0	0
Discount of £18,000 prior lien debenture stock	3,600	0	0	----------			5 per cent prior lien debenture stock	49,002	0	0	49,002	0	0
Balance to balance sheet	11,168	17	9	11,051	14	4	Perpetual debenture stock	449,400	0	0	449,400	0	0
Total	848,402	0	0	848,402	0	0	Total	848,402	0	0	848,402	0	0

The balance sheet as of June 30, 1925, is reproduced below.

ASSETS

	£	s.	d.	£	s.	d.
Cash at bankers and in hand:						
In Uruguay	2,173	6	9			
In London	6,442	10	10			
				8,615	17	7
£5,000 5 per cent war loan, 1929–1947, at cost				4,875	16	0
Government of Uruguay:						
Guaranty moneys accrued to date (since received)	4,994	5	10			
Guaranty in suspense	333	11	2			
Freight account	1,352	3	6			
				6,680	0	6
Sundry debtors and debit balances:						
In Uruguay	2,102	7	4			
In London	8	0	0			
				2,110	7	4
Stores:						
In Uruguay	7,821	4	10			
In transit	2,132	14	8			
				9,953	19	6
Total assets				32,236	0	11

LIABILITIES

	£	s.	d.	£	s.	d.
Capital account: Balance				11,051	14	4
Sundry creditors' and credit balances:						
In Uruguay	6,788	8	4			
In London	3,621	0	1			
				10,409	8	5
Debenture interest accrued:						
On 5 per cent prior-lien debenture stock	1,020	17	6			
On perpetual debenture stock at 3½ per cent, less tax	6,193	5	10			
Two-thirds of net earnings for year (£1,474 1s. 1d.), due to the perpetual debenture stockholders under arrangement of April 12, 1892	982	14	0			
				8,196	17	4
Unpaid interest and dividend warrants				89	6	1
Net revenue, as per account				2,488	14	9
Total liabilities				32,236	0	11

The following table presents the revenue account of the railway for the fiscal years 1912–13 and 1924–25:

Revenue account	1912–13			1924–25			Revenue account	1912–13			1924–25		
Receipts:	£	s.	d.	£	s.	d.	Expenditures:	£	s.	d.	£	s.	d.
Passengers	7,333	3	7	6,099	11	8	Maintenance of way and works	6,163	15	0	13,652	19	2
Goods	19,534	2	7	21,960	6	6	Locomotive expenses	5,485	13	3	5,336	4	7
Parcels	1,202	17	4	876	13	1	Telegraph expenses	73	7	9	105	2	7
Animals				1,411	10	5	Repairs and renewals of cars	639	12	11	1,158	2	1
Excess baggage	103	14	0	73	4	6	Traffic expenses	3,474	2	2	4,341	3	4
Telegraph	226	0	11	329	2	5	General charges [1]	3,393	4	7	5,523	4	6
Hire of rolling stock, etc	528	5	11	338	5	2	Balance to net revenue account	10,967	13	0	1,474	1	1
Ropeway	490	5	0	189	16	1							
Sundries	206	10	7	195	1	11							
Receipts in London	322	14	0	------------									
Difference in exchange	249	14	9	117	5	7							
Total	30,197	8	8	31,590	17	4	Total	30,197	8	8	31,590	17	4

[1] Including salaries, office expenses, trustees', directors', and auditors' fees, insurance and law charges.

Following is the net revenue account for the fiscal year 1912–13:

RECEIPTS

	£	s.	d.
Balance revenue	10,967	13	0
Government of Uruguay:			
Guaranty, July 1 to March 31	12,884	0	7
Guaranty in suspense	28	0	11
Guaranty accrued, April 1 to June 30	4,994	5	10
Guaranty in suspense	8	12	2
Balance from last year	3,417	2	9
	32,299	15	3
Less income tax	1,018	12	4
Total	31,281	2	11

EXPENDITURES

	£	s.	d.
Interest on prior lien debenture stock	2,307	3	7
Interest on perpetual debenture stock	14,811	9	6
Two-thirds net earnings due to perpetual debenture stockholders under arrangement of April 12, 1892	5,374	16	1
Income tax	98	15	10
Balance to balance sheet	8,688	17	11
Total	31,281	2	11

The net revenue account as of June 30, 1925, is shown below:

Dr.:				£	s.	d.
Interest on 5 per cent prior lien debenture stock				2,450	2	0
Interest at 3½ per cent on perpetual debenture stock				15,729	0	0
Two-thirds of net earnings of £1,474 1s. 1d. due to the perpetual debenture stockholders, under arrangement of April 12, 1892				982	14	0
Income tax				666	18	9
Balance carried to balance sheet				2,488	14	9
Total				22,317	9	6
Cr.:						
Balance brought down—Profit for the year				1,474	1	1
Balance brought forward from 1923–24				501	2	7
Interest on 5 per cent war loan, etc				365	2	5
Government of Uruguay—	£	s.	d.			
Guaranty received	14,649	6	5			
Guaranty in suspense	333	11	2			
Guaranty accrued to June 30, 1925 (since received)	4,994	5	10			
				19,977	3	5
Total				22,317	9	6

The following statement shows the capital account to June 30, 1913 and 1925:

Items	1919–20	1920–21	1921–22	1922–23	1924–25
Gross receipts	£30,510	£23,522	£24,853	£29,763	----------
Working expenses	£23,293	£24,219	£20,284	£24,757	----------
Net income	£7,217	[1] £697	£4,569	£5,006	----------
Passengers carried	13,267	10,832	8,854	8,513	8,881
Tons of freight carried	17,854	12,703	11,975	19,487	18,055
Number of cattle carried	3,580	5,984	1,088	685	----------
Number of sheep carried	10,359	1,330	5,228	3,605	----------
Receipts per mile of line	£389	£323	£341	£409	----------

[1] Loss.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the fiscal year ended June 30, 1925, were as follows (the address in each case being Paysandu, Uruguay):

General manager, G. W. Teague.
Chief accountant, W. J. Bradbury.
Resident engineer, A. W. Bennet.
Superintendent of shops, J. Wavrunek.
Traffic superintendent, G. Bigot.

The Montevideo representative is Eduardo Traibel.

Purchases for the road are generally made through the London office and usually by public tender. Communications should be addressed to the secretary, G. R. Cable, River Plate House, Finsbury Circus, London, E. C. 2.

RIGHT OF WAY

Altitude.—The road runs from 326 feet at kilometer 50.5 to 684 feet at kilometer 99, which is the highest point on the road.

Gauge.—The gauge is standard, 4 feet 8½ inches.

Grades.—The maximum grade is 1.8 per cent.

Curves.—The minimum curve radius is 1,640 feet.

Rails.—Rails weighing 56 pounds to the yard in sections of 18 and 24 feet are used. The cross sections of the rail are as follows: Height, 4¼ inches; head, 2⅛ inches; flange, 4 inches.

Ties.—Ties, 2½ by 0.24 by 0.12 meters, of quebracho, jarrah, and steel, spaced 1,100 to the kilometer, are used. Hardwood ties predominate and are imported principally from Argentina, with the exception of the jarrah, which is imported from Australia.

Ballast.—Earth, gravel, and crushed rock are used for ballast, according to the location and availability of the materials.

Loading and clearance.—Loading capacity is limited to packages 18 feet 4 inches long by 7 feet 8 inches wide by 11 feet high, while the maximum weight that can be carried in a single car is 8 tons. The clearance on the road is 4.8 meters above top of rail and 2 meters from center line of track.

Fences and cattle guards.—Most of the right of way is fenced, mainly with nandubay posts strung with galvanized wire. Ample cattle guards of iron gratings are provided where required.

Signaling.—Train dispatch and movement are controlled by telegraph.

Fuel.—Coal is used for fuel.

Water.—Water is obtained from wells and streams. The maximum distance between watering stations is 23 miles. Water tanks are made of cast-iron plates.

Maintenance.—All parts of the roadbed and track are in sufficiently good repair to withstand the traffic they are required to bear.

Bridges.—There are 15 steel bridges in use.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

For the fiscal year ended June 30, 1925, the locomotives included one small switch engine, 0–6–0 class, and four engines having six wheels coupled, 2–6–0 class. Four of the engines have cylinders measuring 15 by 22 inches stroke and one engine has a cylinder measuring 13 by 18 inches stroke. The locomotives are of British manufacture.

The following cars are in operation:

Passenger:	
First class, four-axle	2
Second class, two-axle	1
Total	3
Freight:	
10-ton, open, two-axle	76
Box cars, two-axle	76
Water tank	1
Traveling crane	1
Brake vans, two-axle	3
Total	157
Grand total	160

Central screw couplers and side buffers are in use, the couplers being at a height of 3 feet 4 inches from top of rail. There are no Government regulations concerning draft rigging, couplers, and buffers.

REPAIR SHOPS

At Artigas there is one repair shop, which at the present time is closed down. Repairs are now made at the North-Western Railway Co.'s shop at Salto. The Artigas shop has the following equipment:

1 wheel lathe; common two-face plate; center 2 feet 6 inches.
1 lathe; large screw cutting; center 10 inches.
1 drilling machine; power sliding table; ⅛ inch to 1⅜ inches.

1 shaping machine; single; 11-inch stroke.
1 spiral planing machine; sliding table and double tool head; 3 feet wide, 3 feet high, and 7 feet long.
1 screw machine; bolt and nut expanding dies; ¼ inch to 1½ inches.
1 band saw; movable table; 18 feet by 1½ inches saw.
1 circular saw; to saw up to 10 inches.
1 emery grinder; single stone; stone 2 inches by 14 inches.
1 steam hammer; 1½ hundredweight, 6-inches cylinder, 14-inches stroke.
1 brass furnace; homemade, underground; 18 inches inside diameter.
1 16-horsepower steam engine; compound horizontal; 8 inches and 12¾ inches cylinders by 14 inches stroke.
1 wood-planing machine; under and over; 9 inches thick by 24 inches wide.
1 wood mortising and drilling machine; hand; 6½ inches wide by 7 inches stroke.
1 fan; 12 inches diameter.
1 lathe; screw cutting; 6 inches center.
1 hydraulic wheel press; hand; ram 12 inches diameter, 24 inches stroke.
1 drilling machine; hand; ⅛ inch to 1 inch.

PAN DE AZUCAR-PIRIAPOLIS RAILWAY

This road was built by Don Francisco Piria primarily to serve his extensive quarrying interests at Piriapolis and to facilitate the transportation of visitors and tourists to the summer resort of that name. The line runs from Pan de Azucar to Piriapolis, a distance of 14 kilometers. The owner receives no governmental subsidy. At the expiration of 100 years ownership of the line passes to the Government without indemnity to the owner.

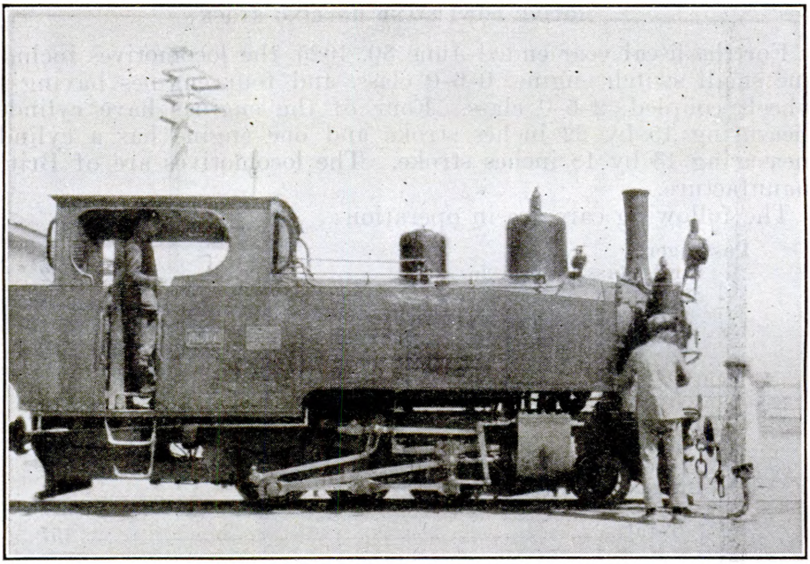


FIG. 15.—Engine used on Pan de Azucar Railway, Uruguay

The entire administration of the line is controlled by Señor Lorenzo Piria, one of the sons of the owner.

Information regarding purchases for the road should be requested of Señor Lorenzo Piria, Piriapolis, Uruguay.

Altitude.—The road runs from 4 meters, at the seashore, to 46 meters, which is the highest point.

Gauge.—The gauge is 0.75 meter.

Grades.—The maximum grade is near the quarries, where it is stated to be 4½ per cent for a distance of 105 meters.

Curves.—The minimum curve radius is 50 meters.

Ballast.—The road is ballasted with broken granite and granite chips from the quarries.

Ties.—The ties are of hardwood, chiefly Argentine quebracho. They measure from 1.40 to 1.60 meters in length and 10 by 25 centimeters, being placed 10 ties to every 7 meters of line.

Rails.—Light steel rails weighing 15 kilos to the meter are used. It is expected that the whole line will shortly be relaid with 30-kilo rails.

Water.—Water is secured from wells at Piriapolis. It is not necessary to replenish the water supply except at this place. The water is held in round iron tanks.

Fuel.—Wood is the principal fuel, although a small amount of Cardiff coal is also consumed annually, principally in the quarry shops. No change in fuel is contemplated at the present time.

Signals.—There is no signaling equipment in use on the line.

Maintenance.—The roadbed is kept in sufficiently good condition to stand the traffic it is required to bear.

Bridges.—There are no bridges on the road.

Tunnels.—There are no tunnels on the road.

As of January 1, 1926, the road owned six old German locomotives. Only two of these are used regularly on the run to Pan de Azucar, the others being employed about the dock and in the quarry and shops. The two largest locomotives were purchased from Arthur Koppel, of Germany, and have eight wheels (four on each side), of which four are driving wheels and the other four on trucks. The smaller types have only six wheels.

The line has 14 passenger coaches, of which 12 are of the open summer type and two are closed. There is also one caboose. In addition, there are 50 open freight cars of two and four trucks each and 50 dump cars of two trucks (four wheels) each. These are all chiefly used for quarry operations, one or two being occasionally diverted for freight or baggage transport.

The passenger coaches, caboose, and five of the freight cars have Westinghouse air-brake equipment. There are no regulations about coupling, draft rigging, or shock absorbers at the end of spurs, etc.

Coupling is effected by hooks and chains, fastened by hand.

There are no repair shops especially set aside for repairs to the rolling stock. The quarry repair shops do such repairs as need to be done.

PUERTO SAUCE-TO-SAN JUAN RAILWAY

This is a small industrial railway extending from Puerto Sauce to the quarries at San Juan and is of 1-meter gauge. At the present time the road is owned by the Compañía de Puerto Sauce, which is in process of liquidation.

TRAMWAYS AND ELECTRIC RAILWAYS

UNITED ELECTRIC TRAMWAYS OF MONTEVIDEO (LTD.)

This company was registered in London on March 24, 1904, to take over La Sociedad Comercial de Montevideo, a Uruguayan company which in November, 1906, had absorbed the Unión y Maronas Tramway in Montevideo. The original lines were converted to electric traction under a concession valid for a period of 75 years from July 22, 1903, at the end of which time the municipality of Montevideo has the right to take over the property at a fixed valuation or, at its option, to extend the concession for an additional period of 15 years. In this latter event the property would revert to the city without payment at the end of that time. A similar concession dated August 21, 1906, applies to the Unión y Maronas line. This line was converted to electric traction in 1908. At the present time the company operates 92 miles of track. According to the Stock Exchange Yearbook for 1925 the finances of the company are as follows:

The authorized capital (ordinary and preference) of the English company is £1,000,000, all of which has been subscribed and paid up, and the authorized borrowing powers of £1,000,000 have been fully exercised, £910,867 being now outstanding. The share-capital redemption account, at March 31, 1924, stood at £37,037 (in certain circumstances the properties revert to the municipal authorities without payment; see above).

Five hundred thousand pounds ordinary shares of £5 (formerly £10, but subdivided in 1908), fully paid, the total authorized. Price in official list, 1½.

Five hundred thousand pounds 6 per cent cumulative preference shares of £5 (formerly £10, but subdivided in 1908), fully paid, the total authorized, with dividends payable June 15 and December 15, and entitled to priority for capital. Price in official list, 3⅜.

Nine hundred and ten thousand eight hundred and sixty-seven pounds 5 per cent first-debenture stock, outstanding amount of £1,000,000, the total authorized. In October, 1904, an issue of £500,000 of this stock was made at 85½ per cent for the purpose of carrying out the conversion to electric traction of the original lines and constructing extensions; in December, 1906, £100,000 was issued at 92¾ per cent; during 1908 £50,000 at 92½ per cent, £50,000 at 93½ per cent, and £100,000 at 93¾ per cent; during 1910 £100,000 at 100½ per cent; during 1913 £50,000 at 95½ per cent; and during 1914 £50,000 at 94½ per cent, making the total authorized of £1,000,000. Interest on the debenture stock is payable May 1 and November 1, and the principal is to be repaid at 105 per cent on November 1, 1978, or before by the operation of a cumulative annual sinking fund by purchase in the market below 105 and accrued interest or by annual drawings on November 1 at 105, which is also to be the price of redemption in voluntary liquidation for amalgamation or reconstruction (the first redemption took place during 1908). The stock is secured by trust deeds (trustees, Earl of Dunmore, C. W. Trotter, N. G. Touche) as a specific charge on the securities held in the operating company. Price in official list, 68.

The accounts are made up annually to March 31 and submitted in June or July. For 1907–8 and 1908–9 the ordinary shares received 5 per cent each year; for 1909–10, 6; for the four years to 1913–14, 7; for 1914–15, 4; for 1915–16 and 1916–17 only the preference dividend was paid; for 1917–18 only interest charges were met; for 1918–19 a half year's preference dividend was paid; for 1919–20 two and one-half years' preference dividend was paid (thus clearing off arrears), but there was no distribution on the ordinary; for 1920–21 the ordinary received 4 per cent; 1921–22, 1922–23, and 1923–24, only the preference dividend was paid. Renewals and contingency account, £224,042; share capital redemption account, £37,037 (£33,530 invested); carried forward, £4,356 (compared with £1,327). In the report submitted in June, 1924, it was stated that the question of an increase in tariffs remains in abeyance.

Voting power, one vote for each share of either class. Director's qualification, £1,000 in shares of either class. Transfer form, common; fee, 2s. 6d.; debenture stock is transferable in sums of £1 and multiples (separate deed each class of security). Telegraphic address: Retexo, London. Telephone number: 3920 (three lines) London Wall.

TRANVÍA DEL NORTE

For a description of this road, see paragraph under "Government railways."

SALTO TRAMWAY

This was formerly a privately owned tramway, but on December 25, 1925, the lease to private management having expired, the municipal authority of Salto took over the operation of this line. The city has named, as acting manager, Señor Jose R. Malaquina, who has been in charge of the city repair shops.

COMPAÑÍA TRANSATLÁNTICA DE TRANVÍAS ELÉCTRICOS

This company, which has a registered capital of 9,500,000 Uruguayan pesos, operates 133 kilometers of street-car line in Montevideo, Uruguay, maintaining a service in the principal sections of the city and reaching the suburbs of Ramirez, Pocitos, Malvin, Capurro, Maronas, Tres Cruces, Aldea, Buceo, Piedras Blancas, Paso Molino, Belveder, Pantanoso, La Teja, and others.

The operating officials of the road as of April 15, 1926, are: President, Don Carlos Rossi, 696 Calle 25 de Mayo, corner of Juncal, Montevideo; vice president, Don Pablo Wigny, same address.

Purchases for the road are made directly by the company.

The following table indicates the traffic movement for the years 1908, 1910, 1920, 1923, and 1924:

Years	Passengers carried	Trips made	Cars employed	Kilometers run
1908	18, 246, 576	670, 935	111	7, 999, 348
1910	27, 144, 965	629, 675	126	9, 507, 230
1920	51, 092, 586	778, 094	183	13, 418, 655
1923	59, 929, 402	850, 361	219	14, 654, 768
1924	62, 250, 000	784, 242	229	14, 650, 000

As of April 15, 1926, the company had 280 cars and 95 trailers in operation.

The central repair shop is situated at Bella Vista, but the shops for the construction and reconstruction of cars and for the maintenance of track and aerial installations is situated on Calle Larrobla near Calle Uruguay. There are three car barns, one on Calle Agraciada near General Luna (Arroyo Seco), one on Calle Maldonado near Eduardo Acevedo, and one on Avenida General Flores near San Fructuoso.

The company maintains a main power station in Bella Vista, Montevideo, with substations in Pantanoso, Maronas, and Aldea.

VENEZUELA

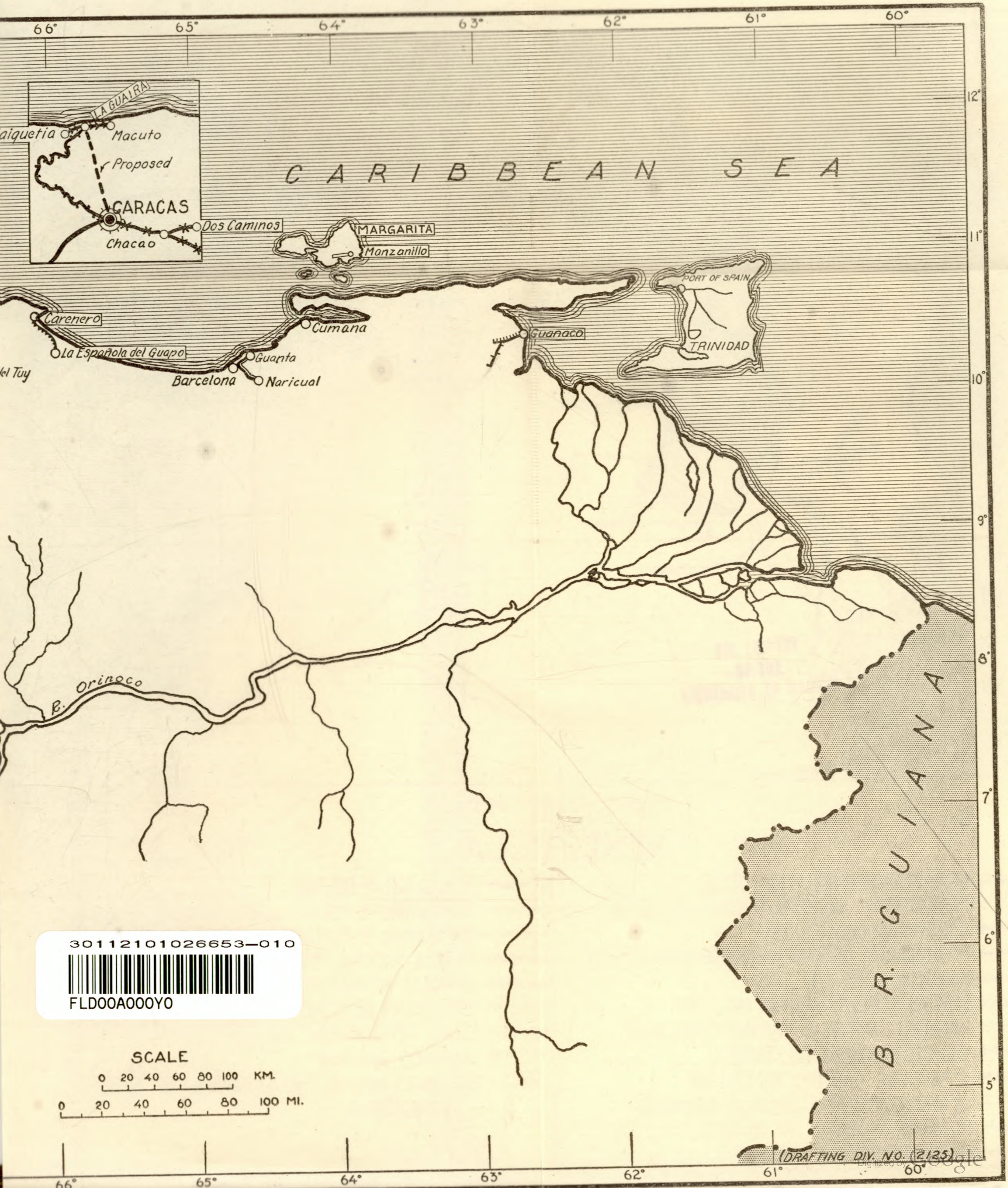
GENERAL CHARACTERISTICS

Venezuela, with an area of 393,976 square miles, is in the northernmost part of South America, being bounded by Colombia, Brazil, British Guiana, and the Caribbean Sea.

Transportation facilities in Venezuela are afforded more readily by its 6,000 miles of navigable rivers than by any other means. The most important of these rivers is the Orinoco, while the Meta, the Apure, the Portuguesa, the Yaracuy, and the Escalante are all prominent in the inland waterway system. In addition to the rivers, Lake Maracaibo, which covers an area of approximately 8,000 square miles, is navigable and, with its tributary rivers, offers an excellent means of communication in that section.

Venezuela has under way at the present time a good-roads campaign second to none in South America. The effect that a network of such roads will have on the railways can be seen by the inroads already made on railway finances where a rail line is operated in competition with a highway. It is estimated that approximately 60 per cent of the total appropriation of the Ministry of Public Works is applied yearly to road construction.

The railway situation in this country is peculiar. The Government plays no important part in the railway activities of the country. The Government itself owns 109 kilometers of track and these are all minor lines. The nationalization policy so often found in other countries is entirely lacking. The main railroads of the country and those which are best operated are all independently owned and total 834.84 kilometers. In addition, the industrial railways have in operation 256.5 kilometers, while the street-car lines are 52.5 kilometers in length. In all, Venezuela has 1,253.54 kilometers of track in operation. Practically all this track is not connected with other lines and serves only in bringing a certain type of freight from interior points to the Caribbean coast. The only new development in the Venezuelan railway situation is the present electrification of the La Guiara & Caracas Railway. The completion of this work will occur during the present year. A discussion of these railways will be found in the following pages.



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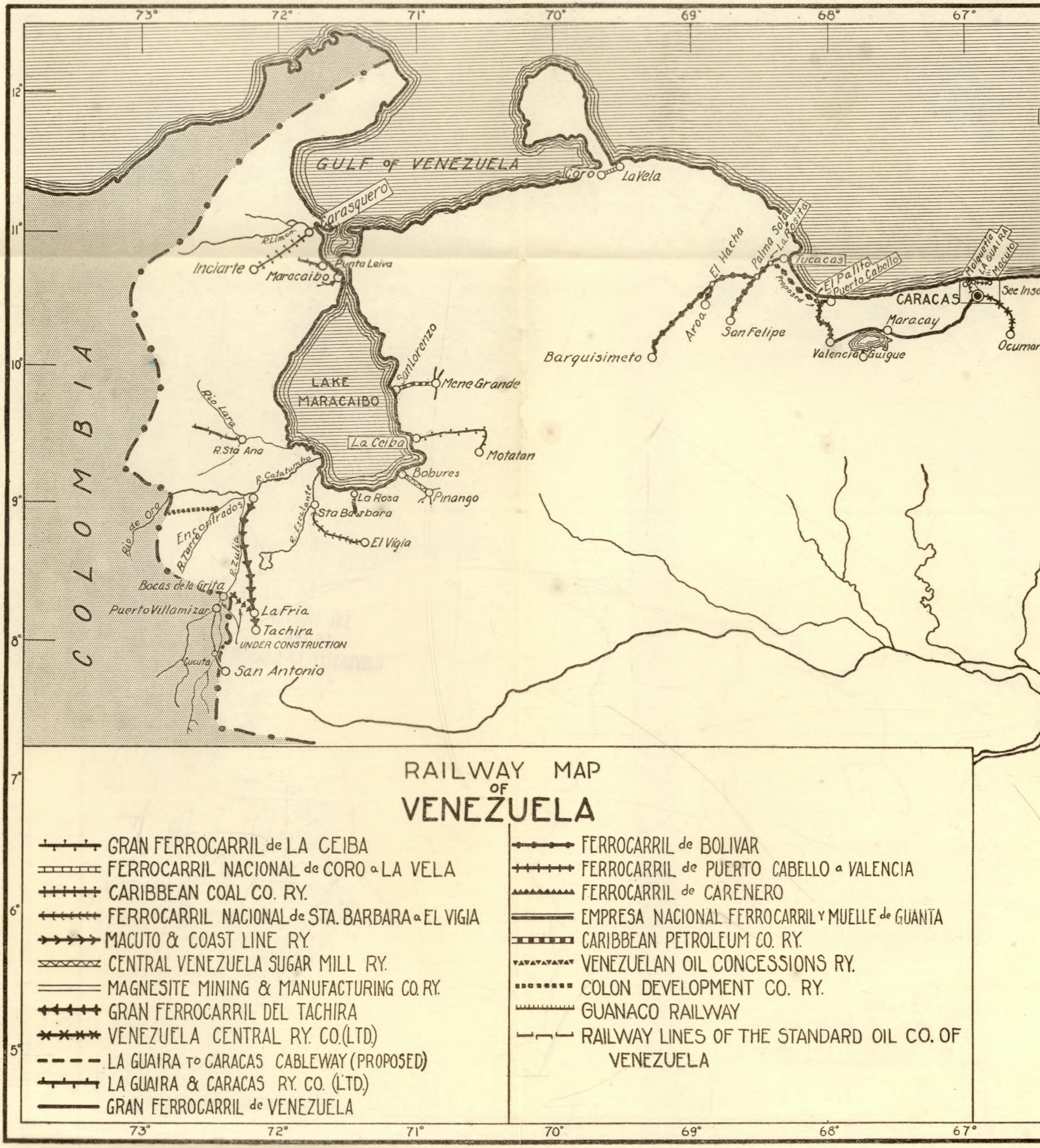

RAILWAY MAP OF VENEZUELA
GRAN FERROCARRIL de LA CEIBA
FERROCARRIL NACIONAL de CORO a LA VELA
CARIBBEAN COAL CO. RY.
FERROCARRIL NACIONAL de STA. BARBARA a EL VIGIA
MACUTO & COAST LINE RY.
CENTRAL VENEZUELA SUGAR MILL RY.
MAGNESITE MINING & MANUFACTURING CO. RY.
GRAN FERROCARRIL DEL TACHIRA
VENEZUELA CENTRAL RY. CO. (LTD.)
LA GUAIRA TO CARACAS CABLEWAY (PROPOSED)
LA GUAIRA & CARACAS RY. CO. (LTD.)
GRAN FERROCARRIL de VENEZUELA
FERROCARRIL de BOLIVAR
FERROCARRIL de PUERTO CABELLO a VALENCIA
FERROCARRIL de CARENERO
EMPRESA NACIONAL FERROCARRIL Y MUELLE de GUANTA
CARIBBEAN PETROLEUM CO. RY.
VENEZUELAN OIL CONCESSIONS RY.
COLON DEVELOPMENT CO. RY.
GUANACO RAILWAY
RAILWAY LINES OF THE STANDARD OIL CO. OF VENEZUELA
73°
72°
71°
70°
69°
68°
67°
12°
11°
10°
9°
8°
7°
6°
5°
GULF of VENEZUELA
COLOMBIA
Coro
La Vela
Carasquero
R. Limon
Inciarte
Maracaibo
Punta Leiva
LAKE MARACAIBO
San Lorenzo
Mene Grande
La Ceiba
Motatan
Bobures
Pinango
La Rosa
Sta Barbara
El Vigia
Rio Lora
R. Sta Ana
R. Catatumbo
Encontrados
Rio de Oro
R. Tarra
R. Zulia
R. Escalante
Bocas de la Grita
Puerto Villamizar
La Fria
Tachira
UNDER CONSTRUCTION
Cucuta
San Antonio
El Hacha
Aroa
Palma Sola
La Rosita
Tucacas
Proposed
San Felipe
Barquisimeto
El Palito
Puerto Cabello
Valencia
Guigue
Maracay
CARACAS
Maiquetia
LA GUAIRA
Macuto
See Inse
Ocumar

FIG. 16

At the present time the railroads in operation are as follows:

	Kilometers
Government owned:	
Empresa Nacional Ferrocarril y Muelle de Guanta	37
Ferrocarril de la Vela a Coro	13
Ferrocarril Nacional de Santa Barbara a El Vigia	60
	110
Private railways:	
La Guaira & Caracas Railway Co. (Ltd.)	37
Gran Ferrocarril de Tachira	120
Venezuela Central Railway Co. (Ltd.)	83
Ferrocarril de Bolivar	209
Ferrocarril de Puerto Cabello a Valencia	55
Gran Ferrocarril de La Ceiba	85
Gran Ferrocarril de Venezuela	184
Ferrocarril de Carenero	54
Ferrocarril de Maiquetia a Macuto	8
	835
Industrial railways:	
Colon Development Co.'s Railway	17
Railroad of Asphalt Mines of Guanipa	3
Caribbean Petroleum Co.'s Railway	40
Guanoco Railroad of New York & Bermudez Co	13
Standard Oil Co. of Venezuela's Railway Lines	50
Largo Petroleum Corporation's Railway	4½
Venezuelan Oil Concession's Railway	4½
British Controlled Oilfields Railroad	55
Caribbean Coal Co. Railroad	42
"Central Venezuela" Sugar Mill Railroad	20
Magnesite Mining & Manufacturing Co	7
	256
Street-car lines:	
United Electric Tramways Co. of Caracas	29
Maracaibo Street Railway—	
La Tranvía Eléctrica de Bella Vista	9
La Tranvía Eléctrica de Maracaibo	11
La Empresa de Tracción y Fuerza Eléctrica	4
	53
Total in operation	1,254
Proposed railway: La Guaira to Caracas Cableway	23

EMPRESA NACIONAL FERROCARRIL Y MUELLE DE GUANTA

This history of the above road dates from 1893, when the so-called Guanta, Barcelona & Naricual Railway was opened for traffic. The line was originally constructed by British interests under a contract dated November 27, 1885, by which the Venezuelan Government guaranteed 7 per cent annually on the capital (4,500,000 bolivars) to be invested in the construction of this railway and of the pier at Guanta. On April 18, 1896, the road was sold to the Venezuelan Government and the above contract ended by the payment of 4,450,000 bolivars in bonds to the owners. The road has 36.4 kilometers of track in operation and is owned and operated by the Venezuelan Government. The full name of the company is "Empresa Nacional de Minas de Carbón, Ferrocarril y Muelle de Guanta"

(National Coal Mines, Railroad & Pier Co. of Guanta). It is also spoken of as the "Empresa Nacional Ferrocarril y Muelle de Guanta" (National Railroad & Pier Co. of Guanta), the "Ferrocarril Guanta-Barcelona" (Guanta-Barcelona Railway), or the "Ferrocarril Guanta, Barcelona & Naricual" (Guanta, Barcelona & Naricual Railway).

The railroad has no capital stock, but as of December 31, 1925, approximately 5,199,745 bolivars were invested. Of this amount about 3,713,820 bolivars were invested in the railroad itself, as distinguished from the pier, customhouse buildings, and certain works at the coal mines. The principal commodity carried is coal from the mines of Naricual to the port of Guanta. The following table shows the traffic and receipts for the calendar years 1913 and 1925:

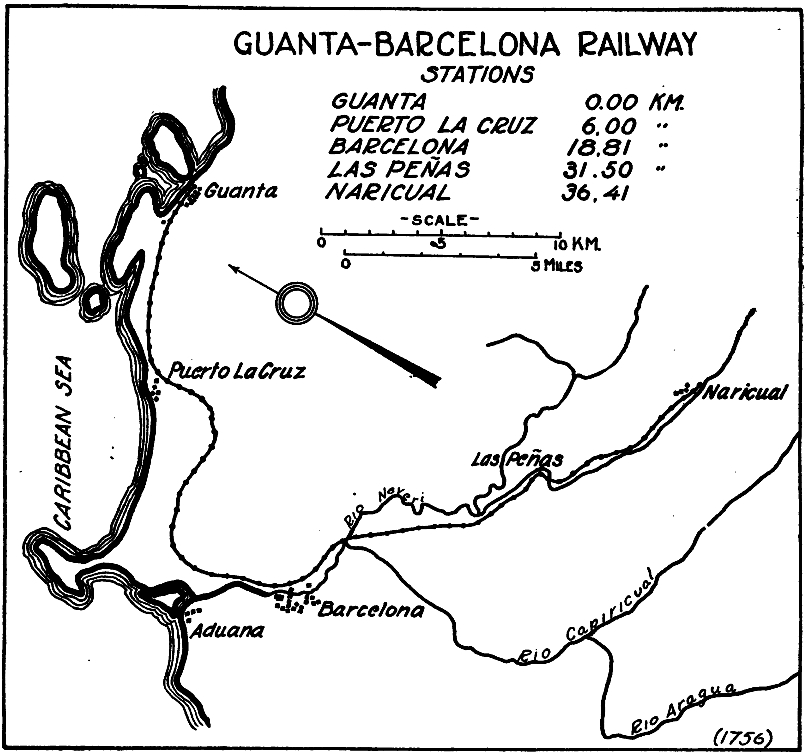


FIG. 17

Items	1913	1925
Number of passengers carried	4, 435	9, 401
Passenger receipts bolivars	12, 739	15, 287
Freight carried metric tons	2, 897	19, 846
Freight receipts bolivars	45, 885	198, 024
Total receipts do	58, 624	213, 311
Total expenditures do	68, 214	257, 209
Loss do	9, 590	43, 898

The road is owned and operated by the Venezuelan Government under the jurisdiction of the Ministry of Public Works. Dr. Pedro Gonzalez, Barcelona, State of Anzoategui, Venezuela, is the general manager of the road.

All purchases for the road are made through the Ministry of Public Works, Caracas, Venezuela.

Altitude.—The road runs from 1.62 meters above sea level at Guanta to 4.23 meters at Naricual, which is the highest point on the road.

Gauge.—The gauge of the road is 3½ feet.

Curves.—The minimum curve radius is 125 meters.

Ballast.—Crushed rock is used for ballast.

Ties.—Ties secured locally, of native hardwood, are used.

Rails.—Rails weighing 40 pounds per yard are used.

Water.—The water supply is abundant. Water is obtained from the Neveri River and pumped into tanks at the water stations.

Fuel.—Coal obtained from the mines at Naricual is used as fuel. At the present time there are no plans for electrification of the line.

Bridges.—There are six bridges on the road, having a total length of 265 meters.

Tunnels.—There are no tunnels.

The motive power for the calendar year 1925 comprised seven locomotives, of which three are old ones purchased from the German "Great Venezuela Railroad Co.," while two of the others are 32-ton engines purchased by the Government a short time ago.

The cars include:

Passenger cars	5
Flat cars	6
Coal cars (5 tons each)	112
Baggage cars	2
Flat cars for hauling wood	5
Hand cars	5
Rail motor cars	1
Total	136

There is one small repair shop, located at Naricual, which is operated in connection with the coal mines.

LA VELA-TO-CORO RAILWAY

(FERROCARRIL DE LA VELA A CORO)

The history of this road dates from a contract of December 12, 1892, granted to Manases Capriles. The road was taken over by an American company which completed its construction in 1896 at a cost of 1,040,000 bolivars. In 1907 the company became bankrupt and the line was taken over and operated by an American syndicate until 1909, when the accrued debt of the original company was canceled, together with all guaranties, and the railroad was taken over by the Venezuelan Government under the loan of 1895. On February 23, 1910, the Government entered into a contract with Gen. Leon Jurado for the operation of this road. At the end of this time the Government decided to operate the road itself and appointed a manager who is under the direction of the Ministry of Public Works. The first year of its operation was the best financial year it has had. Such little profit as is made at the present time is used to improve the rolling stock. At the present time the road runs from Coro, the capital of the State of Falcon, to the seaport of La Vela, a distance of 13.3 kilometers. No increased mileage is planned at the present time.

The railway has no capital stock and, as stated, is owned and operated by the Venezuelan Government. The total investment in the line is 1,040,000 bolivars. The following statement shows the revenue and expenses for the years indicated:

Years	Passenger revenue	Passengers carried	Freight revenue	Metric tons of freight carried	Total revenue	Total expenditures	Net profit or loss
	Bolivars	*Number*	*Bolivars*		*Bolivars*	*Bolivars*	*Bolivars*
1913	375	349	25, 656	2, 147	26, 231	25, 604	+627
1923	11, 288	7, 772	49, 839	9, 382	61, 127	60, 726	+401
1924	11, 699	6, 776	47, 520	9, 251	59, 219	59, 363	−144
1925	10, 611	6, 248	46, 590	6, 613	57, 101	57, 275	−174

As of March 1, 1926, the Government administrator of the road is Jose M. Capriles, Caracas, Venezuela. Jose Demetrio Leanez is Mr. Capriles's agent in Coro, Venezuela. The coal mines of the Coro coal-producing district are under the same management.

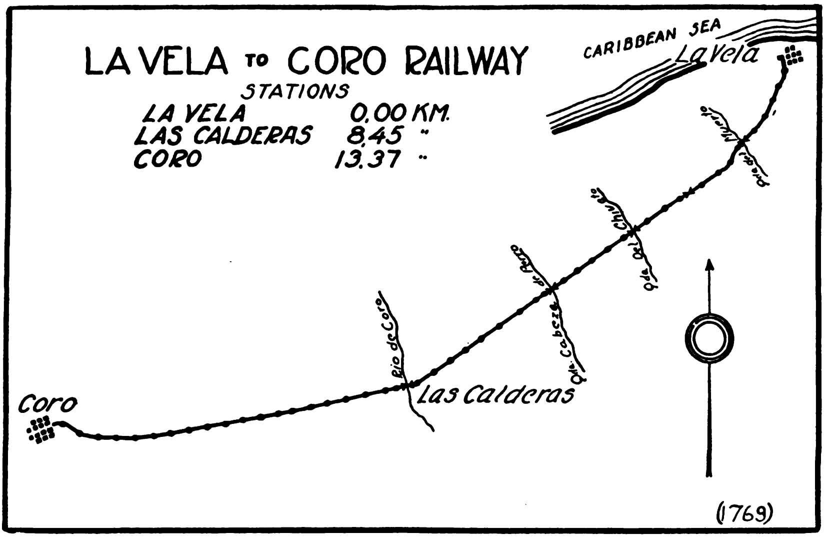


FIG. 18

Purchases are made through the Ministry of Public Works, Caracas, Venezuela.

Altitude.—The road runs from 1.20 meters above sea level at La Vela to 18 meters at Coro, the highest point on the road.

Gauge.—The gauge is 3 feet.

Grades.—The maximum grade is 0.84 per cent.

Curves.—The minimum radius of the curves is 117 meters.

Ballast.—The ballast used is crushed stone.

Ties.—All ties are made of hardwood such as cuji (*Acacia macracantha*) or vera (*Bulnesia arborea*).

Rails.—Rails weighing from 15 to 20 kilos per meter are used.

Water.—Water is obtained from the Las Calderas River. Water stations are from 4 to 8 kilometers apart.

Fuel.—Coal and wood obtained locally are used for fuel. Fuel stations are from 4 to 8 kilometers apart. At the present time there are no plans for changing fuel.

Maintenance.—The roadbed and track are in sufficiently good repair to bear the traffic they are required to carry.

Bridges.—There are seven viaducts and one steel bridge, the total length of these being 366 meters. The steel bridge was imported from the United States in the year 1902 and is still in good condition.

Tunnels.—There are no tunnels on the road.

As of February 1, 1925, the road had two locomotives, one passenger car, one box car, and three flat cars of 10, 7, and 5 tons, respectively.

There is one repair shop at Coro, in which all repairs are made. At this place there is also a warehouse which is rented to the railway by private owners.

SANTA BARBARA-TO-EL VIGIA NATIONAL RAILWAY

(FERROCARRIL NACIONAL DE SANTA BARBARA A EL VIGIA)

The history of this road dates from July 25, 1887, when a contract was entered into between the Venezuelan Government and the Duque de Morny, a French citizen, for the construction of a railway to run from Santa Barbara, on the Escalante River, to El Vigia. The concessionaire undertook the construction of a road under the guaranty, but in 1892 the Government took the line over. Government operation, however, dates from 1895. At the present time the railway is leased out to Gen. Anabel Sanchez, who gets a certain percentage of the earnings. The road at the present time is 60 kilometers in length and has no track under construction. At one time it was proposed to extend a line to La Vega, a distance of 6 kilometers.

The road is capitalized for 3,021,880 bolivars, held by the National Government of Venezuela. Following is a comparison of the road's income, expenditures, and traffic management for the years indicated:

Years	Number of passengers	Passenger revenue	Freight revenue	Total income	Total expenses
		Bolivars	*Bolivars*	*Bolivars*	*Bolivars*
1909	150	898	129, 327	130, 225	154, 020
1910	988	4, 407	195, 030	199, 437	175, 140
1911	1, 276	7, 331	256, 625	264, 956	182, 543
1912	5, 678	16, 035	341, 008	357, 043	197, 261
1913	3, 377	10, 278	206, 493	365, 297	216, 771
1914	2, 789	7, 621	467, 743	475, 364	315, 813
1915	4, 823	12, 230	453, 648	465, 878	355, 966
1916	4, 374	11, 066	391, 015	402, 081	294, 151
1917	8, 048	20, 570	520, 417	540, 987	356, 629
1918	10, 700	27, 955	423, 360	451, 315	266, 789
1919	11, 940	32, 676	629, 803	662, 479	333, 338
1923	9, 275	30, 530	717, 162	747, 692	518, 400
1924	14, 697	40, 076	792, 920	832, 996	548, 011
1925	52, 976	51, 025	1, 023, 993	1, 075, 018	504, 592

As of October 15, 1925, the road was leased to Gen. Anabel Sanchez, Maracaibo, Venezuela. The chief engineer is Herman Lemoine.

All purchases for the road are made through the Ministry of Public Works, with the approval of the lessee.

Altitude.—The road runs from 14 meters above sea level at Santa Barbara to 132 meters at El Vigia.

Gauge.—The gauge is 1 meter.

Grades.—The maximum grade is 2 per cent between kilometers 30 and 60.

Curves.—The minimum curve radius is 100 meters.

Ties.—Ties are of native hardwood.

Rails.—Rails weighing 20 kilos per meter are used.

Water.—Water is obtained locally from rivers and wells.

Maintenance.—The roadbed and track are in poor condition. There are frequent washouts caused by the river.

Bridges.—There are 15 bridges, having a total length of 138 meters.

Tunnels.—There are no tunnels on the road.

As of February 15, 1925, the road had four French locomotives built between 1881 and 1889 by Compagnie de Fives-Lille. Two of these weigh 25 tons and two weigh 18 tons. The boiler pressure is 160 pounds. The engines are in poor condition. The road has 31 freight cars and 5 passenger cars in operation.

Couplers are of the horseshoe type, 800 millimeters above top of rail.

There is one repair shop, at Santa Barbara. This shop is very poorly equipped. All of the engines are being constantly repaired.

LA GUAIRA & CARACAS RAILWAY CO. (LTD.)

SURVEY OF DEVELOPMENT

The La Guaira & Caracas Railway has been in operation since July, 1883, under a concession valid for 99 years, granted on October 22, 1880, to William A. File. It is considered one of the best operated railways of the Republic. La Guaira is approximately 6 miles from Caracas by direct line, although by the present railroad route a distance of 23 miles is covered.

The engineer who built the La Guaira-Caracas Railway followed the old wagon road whenever possible, but much of the roadbed had to be blasted out of solid rock. Ferdinand de Lesseps, the canal builder, once declared that there was but one dangerous part of the line—and that extended the entire distance.

Every precaution against accident is taken by the company. Track walkers go over every foot of the line several times a day and inspect it carefully before passage of all trains. At every curve there is a flagman, and switches are inspected hourly.

At the present time the railway is being electrified, but work is rather hampered by the fact that on a single-track railway it is difficult to transport the necessary supplies and to maintain a regular schedule. Work is progressing, however, and the foundation for the power plant at Zigzag is already completed. As of April 31, 1926, 5 kilometers of posts had already been erected out of Caracas.

FINANCES

The authorized and issued capital stock is £350,000 (originally in £10 shares), of which £160,000 was subscribed for in Venezuela by the National Government, various municipalities, etc. There is also 5 per cent debenture stock for £370,000, issued in 1887 to replace 7 per cent debentures; interest is payable March 1 and September 1, and the stock is redeemable in 1982, unless prior to 1926 the stock shall have been declared perpetual. The trustees are G. R. T. Upton and Lord St. Davids.

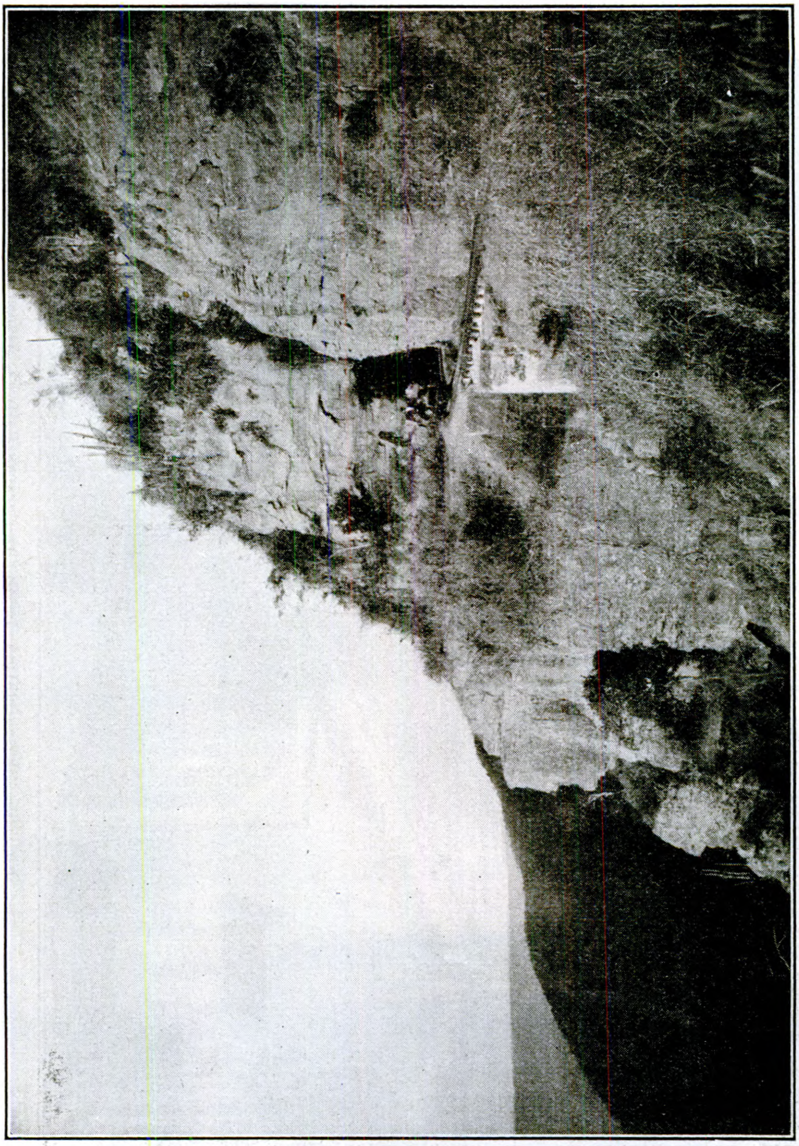


FIG. 19.—Boqueron tunnel, La Guaira-Caracas Railway, Venezuela

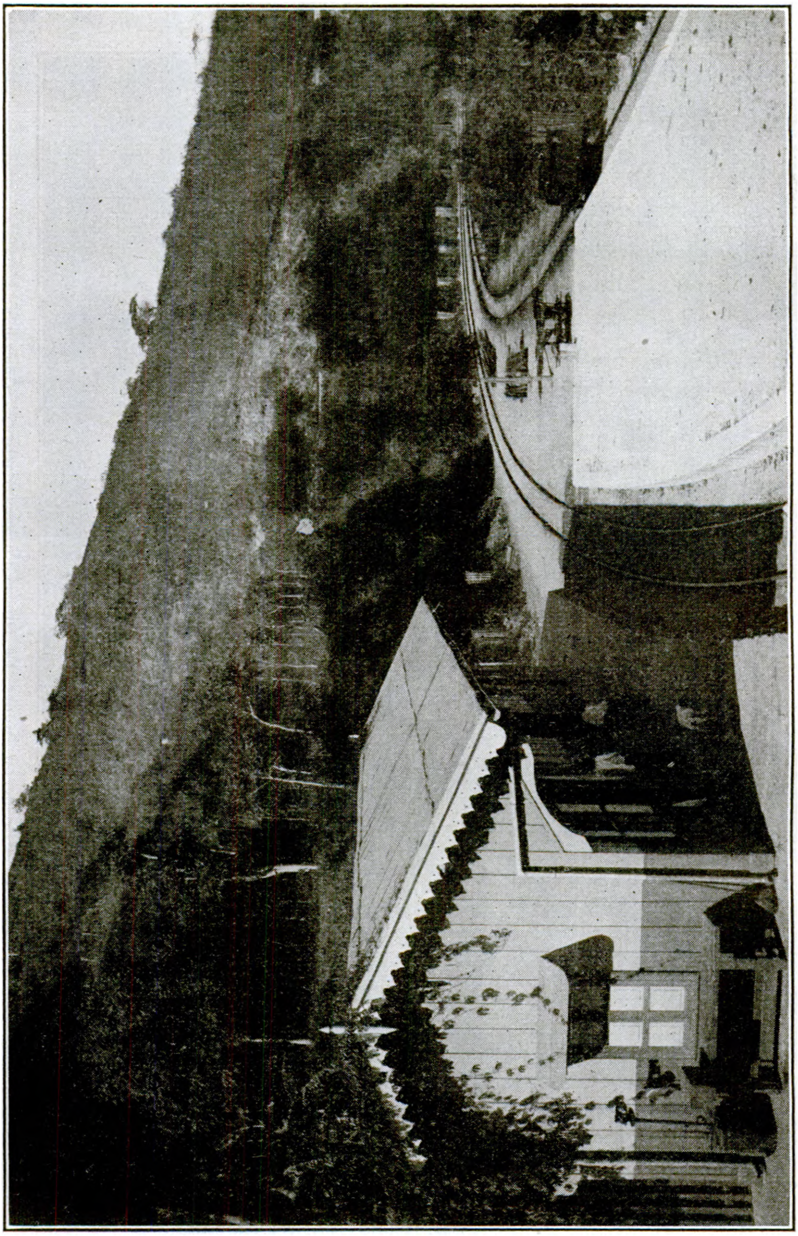


FIG. 20.—Zig-zag station, La Guaira-Caracas Railway, Venezuela

On February 2, 1926, an extraordinary general meeting of the company was held in London, England, to consider a proposal to electrify the line. This proposal was unanimously approved. The resolution adopted provides for the capitalization of the reserves and the issuance to the stockholders of a bonus in shares of 35 per cent. The chairman of the board of directors in his speech stated that the new shares would rank for dividend after January 1, 1928; that by utilizing the reserves the company would forfeit the interest of between £6,000 and £7,000 per annum which it now receives; that when the new stock ranks for dividend it would require an additional £13,000 yearly, and that to place the company in the same position as it is in now, with the same dividend on the whole of the new stock and the old stock, there would be needed an additional net revenue of £20,000. The chairman further stated that he expected the electrification to provide sufficient additional revenue to meet the new requirements.

The accounts are made up annually to December 31 and submitted in May or June. For 1910, 5½ per cent was paid on the shares; for 1911, 7; for 1912, 1913, and 1914, 8 each time; for 1915, 1916, 1917, and 1918, 6; for 1919, 7; four years to 1923, 8, including a bonus of 1 per cent each year. From and inclusive of 1916 dividends and bonuses have been paid free of income tax. The reserve fund is £72,037; improvement and renewal account, £29,279; carried forward, £2,037. Investments standing at £108,739 at December 31, 1923, were stated to have a market value of £118,264. On account of 1924, 3 per cent free of tax was paid in November. The gross receipts from January 1 to December 31, 1924, were £141,110 (an increase of £5,340).

The following table is indicative of the finances and traffic movement of the road for the years indicated:

Years	Number of passengers	Passenger revenue	Freight carried	Total income	Total expenses
		Bolivars	*Kilos*	*Bolivars*	*Bolivars*
1913	92, 006	647, 769	75, 878, 825	2, 694, 673	1, 239, 533
1914	98, 900	580, 215	75, 023, 787	2, 574, 015	1, 210, 216
1915	88, 502	435, 311	64, 014, 137	2, 089, 534	1, 102, 991
1916	86, 806	476, 457	70, 134, 685	2, 348, 695	1, 017, 529
1917	81, 114	468, 942	66, 303, 306	2, 199, 326	1, 077, 783
1918	80, 690	435, 944	51, 545, 000	1, 782, 375	965, 232
1919	73, 305	508. 286	76, 334, 784	2, 483, 010	1, 205, 046
1923	103, 176	613, 251	90, 005, 000	3, 339, 221	1, 805, 215
1924	132, 470	706. 500	93, 072, 000	3, 393, 863	1, 837, 208
1925	153, 767	792, 391	108, 108, 534	3, 615, 564	2, 042, 265

OPERATING OFFICIALS AND PURCHASES

As of March 1, 1926, the operating officials of the road are as follows:

General manager, A. C. Clarke, Caracas, Venezuela.
Chairman of board of directors, J. A. Goudge, Moorgate Hall, London, E. C. 2.
Managing director, T. Lee C. Pilditch, Moorgate Hall, London, E. C. 2.

Purchases are made principally through the main office of the company in London, England. Some purchases are made at Caracas by the general manager. Purchases are made direct, not by tender. The purchasing agents in the United States are Bliss, Dallett & Co., New York City.

RIGHT OF WAY

Altitude.—The road runs from La Guaira, which is 8 meters above sea level, to Caracas, which is 911 meters, the highest point on the road.

Gauge.—The gauge of the road is 3 feet.

Grades.—The maximum grade is one of 3¾ per cent.

Curves.—The minimum curve radius is 43 meters.

Ballast.—Crushed rock is used for ballast.

Ties.—Ties secured locally, of greenheart wood, spaced 1,400 ties per kilometer, are used.

Rails.—Rails weighing 65 pounds to the yard, in 24-foot sections, are used.

Fuel.—Coal was formerly used as fuel, but the road is now being electrified and a power generating plant is being erected at Zigzag. It is estimated that the total cost of electrifying will approximate £130,000.

Water.—Water is secured from springs. There are seven steel water tanks along the line, approximately 5 kilometers apart.

Maintenance.—The roadbed and track are kept in sufficiently good repair to accommodate the traffic they are required to carry.

Bridges.—There are 15 steel bridges, having a total length of 281½ meters.

Tunnels.—There are eight tunnels, with a total length of 379½ meters.

MOTIVE POWER AND ROLLING STOCK

The line has 13 locomotives of British manufacture, weighing 38 tons each. The wheel arrangement of the engines is 0–6–2. The engines are old, and their use will be discontinued when the line is completely electrified.

There are thirty passenger cars, forty 10-ton flat cars, and seventy-seven 15-ton box cars.

Link-and-pin couplers are used.

REPAIR SHOPS

The company shops are at Caracas and are equipped with lathes, drills, planers, slotters, shapers, screw-cutting machines, and other equipment adequate to make the necessary repairs of the line and also for some construction work. The shops are under the supervision of European foremen. A new steel building to house the repair shop is being built at the station at Caracas, and this will be sufficient to meet the increased requirements of the road in the near future.

TACHIRA RAILWAY

(GRAN FERROCARRIL DEL TACHIRA)

SURVEY OF DEVELOPMENT

The history of this road dates from March 31, 1884, when the National Government entered into a contract with Manuel Tejera for the construction of a railway between La Fria, a town on the banks of La Grita River, and El Brazo, a town at the junction of the Zulia River with the Catatumbo River, approximately 3 kilometers from Encontrados. No action, however, was ever taken by the concessionaires, and on December 31, 1892, the Government entered into a contract with Benito and Juan Roncajolo for the construction of a road from Encontrados to La Fria. Encontrados is located on the Catatumbo River, which is navigable up from Lake Maracaibo for shallow-draft lake steamers. By the terms of this contract the National Government was to receive 5 per cent of the net profits from the operation of this road. This tax was canceled by a new contract on January 11, 1913, but the railroad company had, up to that time, paid all its obligations to the Government.

After the line had been constructed to La Fria other contracts were entered into by which the line was extended to Uraca, Meseta de Cara de Perro, and eventually to a place now known as Tachira Station, which is 120 kilometers from Encontrados. It is thought that this is the only railroad in Venezuela that has never asked the Government for a guaranty. The company has received since 1913 various grants of land. These grants start at kilometer 5 and extend to kilometer 87; they consist of alternate areas of 2,500 hectares each (approximately 6,177 acres). On these grants, at the present time, there are various buildings of some importance which are being used for agricultural or stock-raising purposes. The company, in order to assist the stockmen and farmers, and also to encourage the development of this section of the country, collects from all those who live on its lands a merely nominal yearly rental. Lands which are not considered to be very fertile are rented for an annual rental fee of 25 centimos of a bolivar per hectare (approximately 2 cents per acre); lands which are considered to be very fertile are rented for an annual fee of 1 bolivar per hectare (approximately 8 cents per acre).

On December 26, 1924, a contract was signed by Fabio Gonzalez Tavera, representing the Ferrocarril de Cucuta, and Alberto

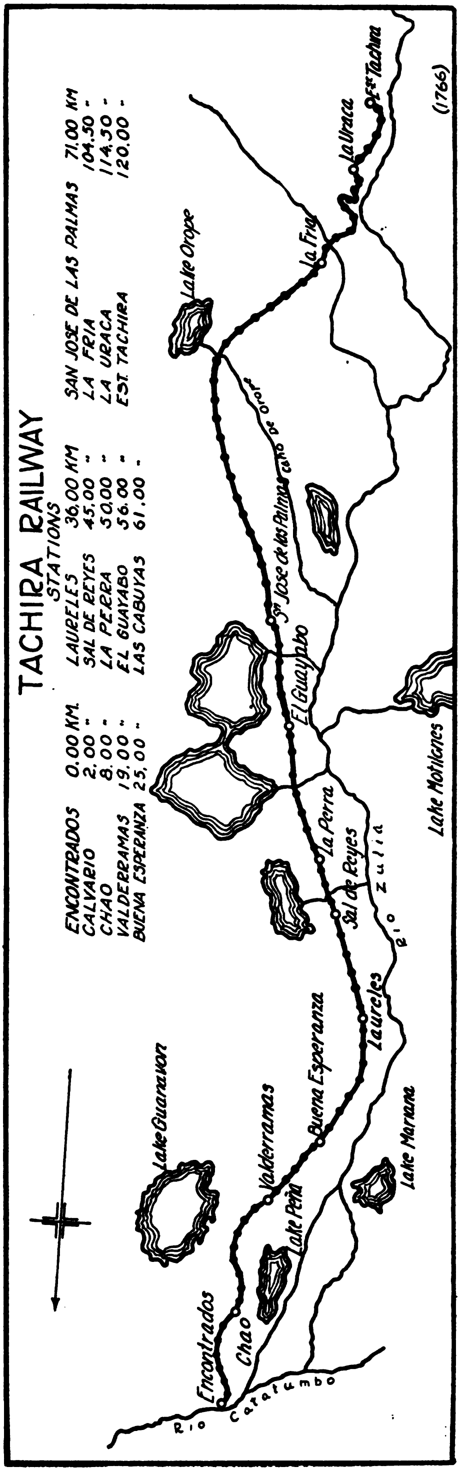


FIG. 21

Roncajolo, representing the Ferrocarril del Tachira, providing for additions to each of these lines which would permit them to be joined and would allow freight and passengers to be carried from Encontrados, on the Catatumbo River, to the city of Cucuta without transshipment. A copy of this contract follows:

First. Each company will construct at its own cost and within the period of a year, unless forces over which they have no control prohibit, the projection of the line: that is to say, the Ferrocarril de Cucuta will construct the section which is in Colombia, or that comprehended between the present terminus of its line, a point situated 2 kilometers southeast of Puerto Villamizar, and the town of El Grita, which has been determined upon by mutual accord between the two companies as the junction point of their lines; and the Ferrocarril del Tachira will construct the Venezuelan section, which is that comprehended between the village of Orope on its present line and the town of Grita, the point above referred to.

Second. The construction of the international bridge over the River Grita, at the spot selected by mutual agreement, will be at the cost of both companies, and the expenses will be equally divided. The construction of the bridge, however, will be entrusted to the Ferrocarril del Tachira in order to save time, and because of other economic reasons.

Third. The use of the rolling stock, excepting locomotives, will be arranged reciprocally between the two companies, which will rent from each other all necessary carriages at the rate of 5 cents Colombian gold or one-fourth of a bolivar Venezuelan currency for each kilometer traveled by any loaded or empty carriage. The companies will by mutual agreement arrange the dates and the periods of time in which the liquidation of the debts incurred by this service will be effected. Each company binds itself to maintain at its own cost all its own vehicles which are to be used in the transient service in good shape and to keep them in good repair. The exchange of trains will be effected in conformity with the dispositions and itineraries which by mutual accord have been agreed upon.

Fourth. The freight charges with respect to transit cargoes of the respective nationalities, each company will fix without any modification whatsoever in conformity with the contracts which they have already agreed upon with their national governments, and the transfer which each must make will be charged for in form and method which its own line regulations determine; but when freight, either imports or exports, proceeding from a district of Venezuela to another district of Venezuela are to be transported by the Ferrocarril de Cucuta, this company will charge a fixed freight rate of 9 Colombian cents, or 45 Venezuelan cents per ton per kilometer. On its part the Ferrocarril del Tachira will charge an equal fixed rate on freight proceeding from one district of Colombia which has to be transported by this railroad line to another Colombian district. For passengers and animals carried as freight, the charges will be the same as the two companies charge for traffic within the countries in which they operate. Freight of an excessive weight or volume will be charged for according to a special contract decided upon by both companies.

Fifth. The Ferrocarril del Tachira will establish in Cucuta an agent who will be intrusted with certifying that the contents of sealed carriages which come from Encontrados are in accord with the certifications signed by the chief of that station, and the Ferrocarril de Cucuta will place in Encontrados another agent who will testify that the contents of sealed carriages which come from Cucuta are in accord with documents signed by the chief of the Cucuta station. But the freight carried between the stations of these lines will be handed over and received at the respective stations of La Grita by the respective conductors of the trains.

Sixth. Between the two stations at El Grita which will belong to each of the two companies there will be a private telephone to be used for official communications. In exceptional cases the two systems may be connected for communication between the headquarters of the two companies, but this must be authorized by one of the managers. There will not be any international service for private business. For the establishment of these two telephone lines each one of the companies will previously fulfill all the requirements which the laws and regulations of their respective countries demand.

Seventh. The companies will establish their itineraries in such a manner that the service between the Estacion Frontera of the Ferrocarril de Cucuta and the station of Encontrados on the Ferrocarril del Tachira will take place, as a rule, every day.

Eighth. All the regulations relating to the charges for freight or passengers may be subject to reform and modification in accordance with what practical management suggests and by mutual agreement of the companies. The charges for the interchange of cars to which the third clause of the agreement refers will be subject to reform and modification under the same conditions. Disagreements and differences which may arise in the interpretation of this agreement will be decided by three arbitrators, of whom one each will be chosen by the two companies and the third will be selected by joint agreement of the said companies. These arbitrators will be chosen preferably from among those who own stock in both the companies or from among those merchants who have their business houses in both Cucuta and Maracaibo.

Ninth. All other matters which have not been referred to in the prior clauses of this agreement will be submitted to the legal authorities of Colombia or of Venezuela according as they pertain to one or the other of these countries.

Construction started immediately, and the policy called for in the above contract was followed out. On April 1, 1926, both roads had reached the River Grita, and on April 19 the bridge across the river was completed and through traffic established.

At the present time the company has 120 kilometers of main-line track in operation extending from Encontrados to Tachira Station and one branch of 15 kilometers extending from Orope to Grita.

FINANCES

The company has always been controlled by Venezuelan capital. At the present time it is believed that the road is on the brink of an era of prosperity, indicated by the fact that, although the par value of the shares is 400 bolivars, they are now selling on the Maracaibo Stock Exchange at from 560 to 600 bolivars. A copy of the contract of January 11, 1913, under which the road is still operated, is as follows:

The Ministers of Treasury and Public Credit and of Public Works, duly authorized by the federal executive, party of the first part, and Carlos Ponthier, representative of the "Compañía Anónima Gran Ferrocarril del Tachira," resident in Maracaibo, party of the second part, have made the following contract:

PRELIMINARY

First. The Compañía Anónima Gran Ferrocarril del Tachira holds a concession for the construction of a railroad from Encontrados, on the Catatumbo River, in the State of Zulia, to La Fria in the State of Tachira, which concession was given by the contract of December 31, 1892, approved by act of the National Congress of May 25, 1894.

Second. By act of May 10, 1899, the National Congress declared the Compañía Anónima Gran Ferrocarril del Tachira to be a public utility, and authorized the national executive to cooperate in the development and continuation of the line.

Third. The Compañía Anónima Gran Ferrocarril del Tachira, at the instigation of the National Government, extended the line from Uraca to Cara de Perro with the object of establishing on that small plain the terminal station necessary for connecting the transportation of the railroad with that of the central highway of Tachira, it being undertaken, in an agreement made with the National Government on December 20, last, to complete said extension by December, 1913—an activity which the National Government considers of great public necessity and convenience, considering the exceptionally unhealthful conditions and the topography and physical disadvantages of Uraca, which make it in every way inadequate for the terminal station referred to.

Fourth. The cost per kilometer of first construction of the proposed line from Uraca to Cara de Perro, as well as the operating expenses of that project, will be considerably greater than those of the rest of the line so far constructed.

Fifth. In conformity with clause 2 of the contract of December 31, 1892, granting a concession for this railroad, the line between La Fria and Uraca was constructed within the period allowed for commencing construction work from La Fria to San Cristobal, but not finished before the expiration of the right for extension of the line from La Fria to San Cristobal.

Sixth. The line was not constructed with the gauge of 1 meter 7 centimeters between rails, stipulated in the concessionary contract.

Seventh. Clause 8 of the said contract did not grant exemption from customs duties to equipment imported for the operation and maintenance of the railroad.

Eighth. Clause 9 of the contract stipulated payment to the National Treasury of 5 per cent of the net proceeds of operation.

Ninth. Clause 10 of the contract did not fix the maximum limits of rates, nor stipulate any reduction for the transportation furnished on account of the National Government.

Taking all these facts into consideration and with a view to definitely providing against any differences or claims which may arise between the National Government and the company, growing out of the concessionary contract of December 31, 1892, and the legislative and executive acts relating to the railroad company, the following agreement has been made:

ARTICLE I

The Compañía Anónima Gran Ferrocarril del Tachira shall have the right to extend its rail line to San Cristobal within a period of 20 years, counting from the date of approval of this contract by the National Congress, but on condition that within the first 7 years of said period work must begin on the extension from Cara de Perro, and that within the first 12 years of said period the extension must be completed at least to the city of Colon. During the first 5 years following approval of this contract by the National Congress the Compañía Anónima Gran Ferrocarril del Tachira shall have preference, other circumstances being equal, in contracting for the construction of the line between San Cristobal and Periquera.

ARTICLE II

The National Government will accept the line of the Tachira Railroad from Encontrados to Uraca with the present gauge of 1 meter between rails, and authorizes the company to make of the same gauge any extensions and branches subsequently constructed.

ARTICLE III

The materials, machinery, tools, utensils, and equipment necessary for the maintenance and operation of the line already built, as well as all of the effects necessary for the construction, maintenance, and operation of branches and extensions, shall be exempt from customs duty during all of the period not covered by the concession.

ARTICLE IV

The National Government cancels the obligation of the company to pay to it 5 per cent of the net proceeds of operation of the line.

ARTICLE V

Freight and passenger rates will not exceed the following maximum limits:

From Tachira station, on Cara de Perro heights, to the port of Encontrados, and vice versa:

		Bolivars
Imported goods	per metric ton	1.15
Salt	do	.71
Goods for export	do	.69
First-class passenger fare	per kilometer	.22
Second-class passenger fare	do	.11

From La Fria to Encontrados, and vice versa:

		Bolivars
Imported goods	per metric ton	1.09
Salt	do	.65
Goods for export	do	.65
First-class passenger fare	per kilometer	.20
Second-class passenger fare	do	.10

ARTICLE VI

Transportation for account of the Government shall be at a reduction of 50 per cent from the current rates.

ARTICLE VII

The National Government concedes to the company the right to have materials imported for the maintenance and operation of the line and for the construction of branches and extensions, discharged at the mouth of the Catatumbo River for transshipment, or at Encontrados, instead of at Maracaibo when they continue from Maracaibo in the same vessel which brings them, but this will be permitted only when the cargo of the vessel consists solely of material for the railroad. The company will comply with all of the essential formalities and will be subject, moreover, to regulations issued by the Government for the protection of its physical interests.

ARTICLE VIII

The second, fourth, seventh, eighth, ninth, and tenth clauses of the contract of December 31, 1892, granting concession for the Encontrados-La Fria line are amended or extended; but all the other clauses of said contract, as well as those which are here amended, shall continue in force in so far as they are not in conflict with the stipulations of this agreement.

ARTICLE IX

It is an expressed condition of this contract that the benefits stipulated therein shall not accrue to either party until the line from Uraca to the Meseta de Cara de Perro has been completed and open to public service in accordance with the terms of the agreement of December 20, 1912.

(Signed) ROMAN CARDENAS.
D. A. CORONIL.
C. PONTHIER.

The following table shows the "operation balance sheet" for the fiscal years indicated:

Items		1913–14	1922–23	1923–24
RECEIPTS				
Imports	kilos	5, 807, 766	5, 507, 925	6, 258, 414
	bolivars	658, 787	619, 881	721, 658
Exports	kilos	11, 222, 484	10, 317, 208	13, 218, 592
	bolivars	852, 810	847, 935	1, 083, 038
Domestic traffic, and animals	do	77, 332	79, 430	99, 724
Passengers	do	58, 334	98, 009	121, 054
Total	kilos	17, 030, 250	15, 825, 133	19, 477, 006
	bolivars	1, 647, 263	1, 645, 255	2, 025, 474
EXPENDITURES				
Administration expenses	bolivars	271, 373	284, 803	306, 991
Traffic expenses	do	135, 915	99, 011	120, 089
Maintenance costs	do	241, 236	207, 947	176, 691
Total	do	648, 524	591, 761	603, 771

The "profit-and-loss account" for the same years is shown below:

Items	1913–14	1922–23	1923–24
	Bolivars	*Bolivars*	*Bolivars*
Dr.:			
Ballast	82, 407		
Materials		188, 753	204, 607
Various securities	38, 239		
Costs of installation and extraordinary expenses	7, 197	250	8, 227
Interest and exchange	4, 291		
Taxes, according to contract	43, 339		
Reserve fund	82, 344	87, 144	123, 585
Total	257, 817	276, 147	336, 419
Cr.:			
Receipts from operation	998, 739	1, 053, 605	1, 422, 383
Interest account and bonuses		5, 885	9, 865
Security owing			
Properties of the company	122	950	2, 613
Other	50		
Total	998, 911	1, 060, 440	1, 434, 861

The following table affords a comparison of the expenses and revenues of the road for the years mentioned:

REVENUES

Years	Imports		Exports		Interior traffic and animals	Passengers	Total	
	Kilos	Bolivars	Kilos	Bolivars			Kilos	Bolivars
					Bolivars	*Bolivars*		
1896	579, 945	57, 178	480, 386	47, 623	2, 351	3, 206	1, 060, 331	111, 952
1900	976, 248	111, 117	4, 210, 023	270, 896	45, 551	12, 571	5, 186, 271	440, 135
1905	4, 913, 066	552, 527	12, 509, 108	874, 843	18, 424	27, 259	17, 422, 174	1, 473, 053
1910	3, 757, 600	456, 287	8, 785, 211	473, 919	19, 784	26, 782	12, 542, 811	976, 772
1913	6, 986, 097	780, 447	11, 867, 326	837, 080	65, 422	61, 832	18, 853, 423	1, 744, 781
1914	5, 807, 766	658, 787	11, 222, 484	852, 809	77, 332	58, 334	17, 030, 250	1, 647, 263
1921	3, 924, 297	417, 489	8, 593, 221	706, 103	77, 108	96, 199	12, 517, 518	1, 296, 899
1922	5, 006, 616	519, 985	12, 420, 434	1, 019, 964	77, 612	99, 167	17, 427, 050	1, 716, 728
1923	5, 507, 925	619, 881	10, 317, 208	847, 935	79, 430	98, 009	15, 825, 133	1, 645, 255
1924	6, 258, 414	721, 658	13, 218, 592	1, 083, 038	99, 724	121, 054	19, 477, 006	2, 025, 474
1925	7, 860, 984	925, 200	9, 809, 045	794, 803	122, 364	132, 187	17, 670, 029	1, 984, 481

EXPENSES

Years	Administration	Operation	Maintenance	Total
	Bolivars	*Bolivars*	*Bolivars*	*Bolivars*
1896	49, 928	9, 683	16, 569	76, 180
1900	117, 373	67, 292	66, 929	251, 594
1905	252, 103	155, 361	310, 892	718, 356
1910	208, 653	109, 297	226, 859	544, 808
1913	262, 516	154, 021	289, 054	705, 590
1914	271, 373	135, 915	241, 236	648, 524
1921	285, 978	92, 333	158, 420	536, 731
1922	283, 789	104, 996	201, 277	590, 062
1923	284, 803	99, 011	207, 947	591, 761
1924	306, 991	120, 089	176, 690	603, 771
1925	341, 258	137, 958	220, 827	770, 043

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road as of January 1, 1926, are as follows: General manager, Alberto Roncajolo, Maracaibo, Venezuela; chief engineer, Julio Bermudez, Maracaibo, Venezuela.

Purchases are made either through the Maracaibo office or through the company's purchasing agents in the United States, Bliss, Dallett & Co., New York City. No purchases are made by public tender.

RIGHT OF WAY

Altitude.—The road runs from 42 meters above sea level at Encontrados to 364 meters at Estacion Tachira, which is the highest point on the road.

Gauge.—The gauge of the road is about 1 meter.

Grades.—The road runs through practically level country as far as La Fria station, which is a distance of 104½ kilometers from Encontrados. From this point to the end of the road, a distance of approximately 16 kilometers, it is a steady uphill pull with grades of about 2.50 per cent and 100-meter curves.

Curves.—The minimum curve radius is 75 meters.

Ties.—Ties are of native hardwood.

Rails.—Rails weighing 30 pounds to the yard are used. Their replacement by 40-pound rails has been recommended.

Fuel.—Wood is used as fuel at the present time, but it is expected that the engines will be converted to oil burners.

Maintenance.—The track is in sufficiently good condition to stand the traffic it is required to bear.

Bridges.—There are 24 bridges with a total length of 785 meters.

Tunnels.—There is one tunnel 36 meters in length.

MOTIVE POWER AND ROLLING STOCK

As of November 1, 1925, the road had nine locomotives, all of American manufacture. The cars were as follows:

Freight cars	41
Flat cars	25
Small work cars	23
Passenger cars:	
First class	3
Second class	4
Gasoline motor cars	1

The freight cars are of 10-ton capacity and are of American manufacture. The passenger coaches are 50 feet long and were built in shops of the company out of native wood. It is planned to purchase one locomotive, one first-class passenger car, and two second-class passenger cars.

The couplers used on the engines are of the following types: Two pocket-draw castings, 15½ and 18½ inches above top of rail, front of engine, and back of tender.

REPAIR SHOPS

There is one repair shop located at Encontrados. The shop is exceptionally well equipped with modern machinery. It has its own electric-lighting plant, and the erecting shop is equipped with air tools. There is also a foundry in connection with the shop, where all necessary repairs are made. The shop has a 10-ton crane mounted on a four-wheeled truck. All of the engines are repaired, on an average, once a year. During the fiscal year ended June 30, 1924, 8 freight cars were repaired, the stock cars were repaired, 11 flat cars were thoroughly repaired, and other repairs, including those on work cars, were made wherever necessary.

VENEZUELA CENTRAL RAILWAY CO. (LTD.)

The history of this road dates from July 7, 1905, when it was registered in England. It received from the Venezuelan Government a concession valid for 99 years from January, 1911, for the construction of a line running south from Caracas to the town of Ocumare del Tuy. At the end of the lease the road reverts to the Government without cost. The line was opened to traffic from Caracas to Santa Lucia, a distance of 52 kilometers, in January, 1911, and to Santa Teresa at the end of 1913, while a further extension from Santa Teresa to Aponte, adjacent to Ocumare, was opened for freight in July, 1922, and for passengers in November, 1922. The line now in operation is 83 kilometers in length, extending from Caracas to Ocumare. An extension of the branch line from Agua de Maiz to Dos Caminos is now open to Los Chorros, a distance of about 3 kilometers, which is equipped with electric traction. About 10 kilometers of the main line is similarly equipped.

FINANCES

The following facts concerning the finances of the road are presented in the Stock Exchange Yearbook for 1925:

The authorized share capital is £500,000 (including £300,000 created in 1919); issued and paid up, £475,000. Borrowing powers, £553,689; outstanding £414,150. In June, 1910, then existing debenture debt was reconstructed, present two classes of debentures, then each limited to £2,500 per kilometer, being issued in equal proportions against old 6 per cent £20 debentures; in February, 1914, further issue of first debentures was made for construction of railway beyond Santa Teresa.

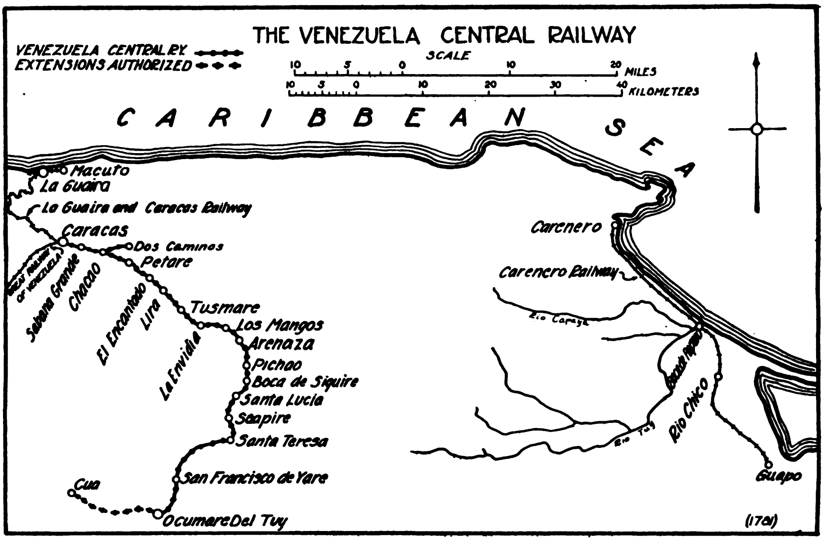


FIG. 22

Four hundred and seventy-five thousand pounds shares of £1, fully paid, including £150,000 issued in 1919, £75,000 in 1920, and £50,000 in August, 1922, credited fully paid to contractors as part consideration for completing extension to Ocumare, providing fresh rolling stock, and improving the existing line. Authorized, £500,000. Price in supplementary list, 1s. 3d.

Two hundred and fifty-one thousand and thirty pounds 6 per cent first debentures of £10 (bearer), outstanding balance of £252,000 (£155,000 issued in part exchange for old debentures under reconstruction plan referred to above, and £85,000 in February, 1914, at 80). Authorized, £304,270. Interest, April 1 and October 1 (see below). Redeemable—on or before December 31, 1949, by annual sinking fund commenced 1922, applicable on December 31 each year to drawings at par or purchase or tender below par; or at 110—at any time on six months' notice from company, or in event of voluntary liquidation. No trust deed.

(Funds being required to repair flood damages, holders waived interest due October 1, 1915, and agreed that until full interest should be paid out of net earnings for three consecutive years one-half of each installment of interest, beginning on April 1, 1916, should be payable only out of net profits and noncumulative; only 1½ per cent was accordingly paid each half year from April 1, 1916, to October 1, 1918 (inclusive). Full interest was paid for six half years to October 1, 1921, and interest is now again a fixed charge. The debentures originally matured December 31, 1953; present sinking fund was established by resolution of December, 1921.)

Latest price in official list, 58.

One hundred and thirty-four thousand one hundred and fifty pounds sterling 6 per cent second debentures of £10 (bearer). Authorized, £249,410. Interest only out of net earnings until full rate shall have been paid for three consecutive years (for payments, see below). Repayable—in 33 years from 1953 from sinking fund operating by drawings at par or purchases or tender under par; or at 110, after first debentures shall all have been redeemed, at any time on six months' notice from company; or at 110 in event of voluntary liquidation. Secured in same way as, but subject to, first debentures.

Interest: 1919 (first), 4 per cent (in May, 1920); none since.

Latest price in official list, 22.

Accounts to December 31, submitted August. No dividend yet; as to debenture interest payments, see above. Gross earnings: 1917, £49,589; 1918, £53,175; 1919, £48,274; 1920, £56,260; 1921, £61,384; 1922, £55,294; 1923, £57,152 (with expenses, excluding London administration expenses, £37,159). Carried forward, debit of £24 (compared with debit of £959). Gross earnings, January 1 to December 31, 1924, £53,660 (decrease £106).

Following is the revenue account for the year ended December 31, 1924:

Dr.:

	£	s.	d.	£	s.	d.
Administration and working expenses, Caracas—						
Maintenance of permanent way	10,258	4	9			
Bridge and station repairs	591	15	6			
Locomotives, running expenses and repairs	11,824	7	0			
Coaches and wagon repairs	1,536	9	0			
Water supply	234	6	0			
Workshop expenses	1,983	17	7			
Station and train service	5,881	8	2			
Telegraph expenses	384	7	3			
Electric cars, running expenses and repairs	2,333	4	5			
Maintenance of electric line	129	8	9			
Care of electric machinery	227	9	6			
General expenses	4,923	5	4			
				40,308	3	3
Administration and general expenses, London				2,007	19	11
Balance carried down				16,182	2	3
Total				58,498	5	5
Balance Jan. 1, 1924				24	3	5
Interest on first-mortgage debentures				15,486	19	11
Debenture redemption account				2,762	17	9
Total				18,274	1	1

Cr.:

	£	s.	d.	£	s.	d.
Traffic receipts—						
Passengers	12,899	4	1			
Merchandise	40,228	2	6			
Firewood, stone, etc	3,079	10	9			
Rent and sundries	95	6	10			
				56,302	4	2
Exchange and interest				2,180	18	9
Transfer fees				15	2	6
Total				58,498	5	5
Balance brought down				16,182	2	3
Balance carried to balance sheet				2,091	18	10
Total				18,274	1	1

The balance sheet, as of December 31, 1924, is reproduced below:

Dr.:

	£	s.	d.	£	s.	d.
Capital authorized, 500,000 shares of £1 each	500,000	0	0			
Capital issued, 475,000 shares of £1 each fully paid				475,000	0	0
Debentures authorized—						
30,427 6 per cent first debentures of £10 each	304,270	0	0			
24,941 6 per cent second debentures of £10 each	249,410	0	0			
	553,680	0	0			
Debentures issued—						
27,343 6 per cent debentures	273,430	0	0			
Less redeemed	12,730	0	0			
	260,700	0	0			
Less instalments unpaid	300	0	0			
	260,400	0	0			
13,415 6 per cent second debentures of £10 each	134,150	0	0			
				394,550	0	0
Debenture redemption account—						
Balance as at Dec. 31, 1923	7,900	0	0			
Transfer from revenue account	2,762	17	9			
Profit on redemption of debentures	2,067	2	3			
				12,730	0	0
Sundry creditors and credit balances—						
London	35,620	5	0			
Caracas	136	3	10			
				35,756	8	10
Total				918,036	8	10

Cr.:

	£	s.	d.	£	s.	d.
Cost of railway and property, including cost of and discount on debenture issue and all other expenditure, as per previous accounts	879,397	11	10			
Add expenditure during the year	15,966	8	1			
				895,363	19	11
Stores at Caracas, including goods in transit				1,549	1	5
Cash at bank and in hand—						
London	244	9	4			
Caracas	2,107	18	6			
				2,352	7	10
Sundry debtors—						
London	16,090	3	7			
Caracas	588	17	3			
				16,679	0	10
Revenue account				2,091	18	10
Total				918,036	8	10

TRAFFIC STATISTICS

The following is a statement of the traffic receipts of the Venezuela Central Railway for the years 1919 to 1925, inclusive:

[Exchange taken at the rate of 25 bolivars per £ sterling]

Months	1919	1920	1921	1922	1923	1924	1925
January	£5, 419	£4, 511	£5, 064	£4, 958	£4, 582	£5, 454	£5, 444
February	4, 507	4, 468	4, 740	5, 082	4, 329	5, 611	5, 407
March	4, 075	5, 376	5, 140	5, 702	5, 361	5, 170	6, 616
April	4, 028	4, 812	5, 781	5, 053	4, 726	5, 146	5, 801
May	4, 026	4, 972	5, 483	4, 784	4, 863	4, 833	5, 905
June	4, 102	3, 780	5, 069	4, 776	4, 209	4, 106	----------
July	3, 051	3, 855	5, 232	4, 560	4, 301	3, 820	----------
August	4, 204	3, 537	4, 643	4, 327	4, 118	3, 711	----------
September	3, 101	5, 405	4, 513	4, 281	4, 663	4, 025	----------
October	3, 914	5, 107	5, 006	3, 913	5, 281	4, 937	----------
November	3, 509	4, 888	5, 303	4, 290	5, 716	5, 054	----------
December	4, 339	5, 549	5, 410	4, 117	4, 887	4, 993	----------
Total	48, 274	56, 260	61, 384	55, 843	57, 036	56, 860	[1] 48, 357

[1] Approximate.

NOTE.—The difference in the total for 1924 as shown in the balance sheet is due to the difference in exchange as calculated by the company's auditors.

The table below shows the kinds of freight handled by the Venezuela Central Railway for the years 1920 to 1925, inclusive:

Articles	1920	1921	1922	1923	1924
	Metric tons	*Metric tons*	*Metric tons*	*Metric tons*	*Metric tons*
Aguardiente	181	244	266	202	211
Beans	173	182	212	254	424
Cane	24	122	183	208	178
Cement and construction materials	864	211	361	922	3, 361
Charcoal	5, 428	6, 923	6, 980	8, 317	7, 186
Cheese	18	20	24	59	49
Cocoa	641	1, 045	956	828	566
Coffee	196	279	340	678	719
Cotton	4	------------	4	11	19
Firewood	4, 256	3, 887	3, 725	3, 296	2, 829
Flour	1	1	1	------------	3
Garlic	1	1	1	2	------------
Hides	30	13	18	43	44
Lard	13	47	25	18	32
Maize	5, 302	8, 015	6, 036	6, 228	9, 075
Merchandise	1, 719	1, 458	1, 794	2, 215	2, 348
Paper	367	425	277	624	584
"Papelon"	20	80	78	25	63
Plantains	120	324	327	466	656
Rice	273	386	83	93	78
Starch	1	8	1	10	10
Sugar	266	480	321	500	474
Sundries	219	224	201	421	432
Timber	580	420	576	934	780
Tobacco	13	4	8	11	13
Sugar cane	------------	------------	------------	50	546
Total	20, 710	24, 799	22, 798	26, 415	30, 780
Passengers carried	395, 737	472, 643	452, 029	434, 180	333, 252

NOTE.—For 1925 the total freight carried amounted to 33,195 tons, while the number of passengers was 408,812.

OPERATING OFFICIALS AND PURCHASES

As of November 1, 1925, the manager of the road was Albert Cherry, of Caracas, Venezuela.

Purchases for the road are made through the home office, 110 Dashwood House, New Broad Street, London, E. C. 2. The New York purchasing agent is Bliss, Dallett & Co., 82 Wall Street.

RIGHT OF WAY

Altitude.—The road runs from Caracas, 880 meters above sea level and the highest point on the road, to Yare, which has the relatively low altitude of 149 meters.

Gauge.—The line is of 3½ feet gauge.

Grades.—The maximum grade on the road is 4 per cent.

Curves.—The minimum curve radius is 50 meters.

Ties.—Ties are of native wood and steel of English make, and in some places rails have been placed between limestone blocks, but this method has proved unsuccessful. Ties are spaced on 85-centimeter centers.

Rails.—German and English rails are used (see Fig. 23). Rails are fastened to wooden ties by spikes and to steel ties by bolts. Fishplates of four bolts per rail are used to secure rail joints.

Ballast.—Ballast is of crushed stone, broken river rock, and gravel obtained from abundant local sources.

Water.—The water supply is abundant and is secured locally from the River Tuy. Water stations are located along the right of way at distances of 10 to 15 kilometers. There is a large steel water tank at Santa Teresa. Practically all the tanks in use are square and of steel construction. There are only two concrete tanks in use.

Fuel.—Crude petroleum is used as fuel. Fuel is furnished by the Caribbean Petroleum Co. in steel tanks built for this purpose. No plans are under way for the electrification of the line.

Maintenance.—The road is kept in sufficiently good repair to withstand the traffic it is required to bear.

Signaling equipment.—Telephone and telegraph are used for dispatching trains. Lights and flags are used for signaling.

Bridges.—The road has the following important bridges:

Kilometer 10, from Caracas: Straight girder steel bridge; length, 16 meters; over small stream.

Kilometer 20.5: Steel truss bridge 38 meters in length, over deep ravine.

Kilometer 22.15: Steel cantilever bridge 90 meters in length, over deep ravine.

Kilometer 23.8: Steel truss bridge 38 meters in length, over deep ravine.

Kilometer 29.3: Steel truss bridge 33 meters in length, over Guaire River.

Kilometer 32.65: Steel truss bridge 45 meters in length, over Guaire River.

Kilometer 40: Steel truss bridge (Warren type), 50 meters in length, over Guaire River.

Kilometer 56: Steel truss bridge 25 meters in length, over Soapiro River.

Tunnels.—The road has the following tunnels:

Kilometer 18.6, from Caracas: Masonry lined, 35 meters in length.

Kilometer 18.8: Masonry lined, 14 meters in length.

Kilometer 19: Unlined, through rock, 50 meters in length.

Kilometer 20: Unlined, through rock, 30 meters in length.

Kilometer 20.5: Brick lined, 32 meters in length.

Kilometer 20.8: Brick lined, 31 meters in length.

Kilometer 21: Unlined, through rock, 33 meters in length.

Kilometer 21.5: Brick lined, 55 meters in length.

Kilometer 21.9: Unlined, through rock, 25 meters in length.

Kilometer 23: Brick lined, 48 meters in length.

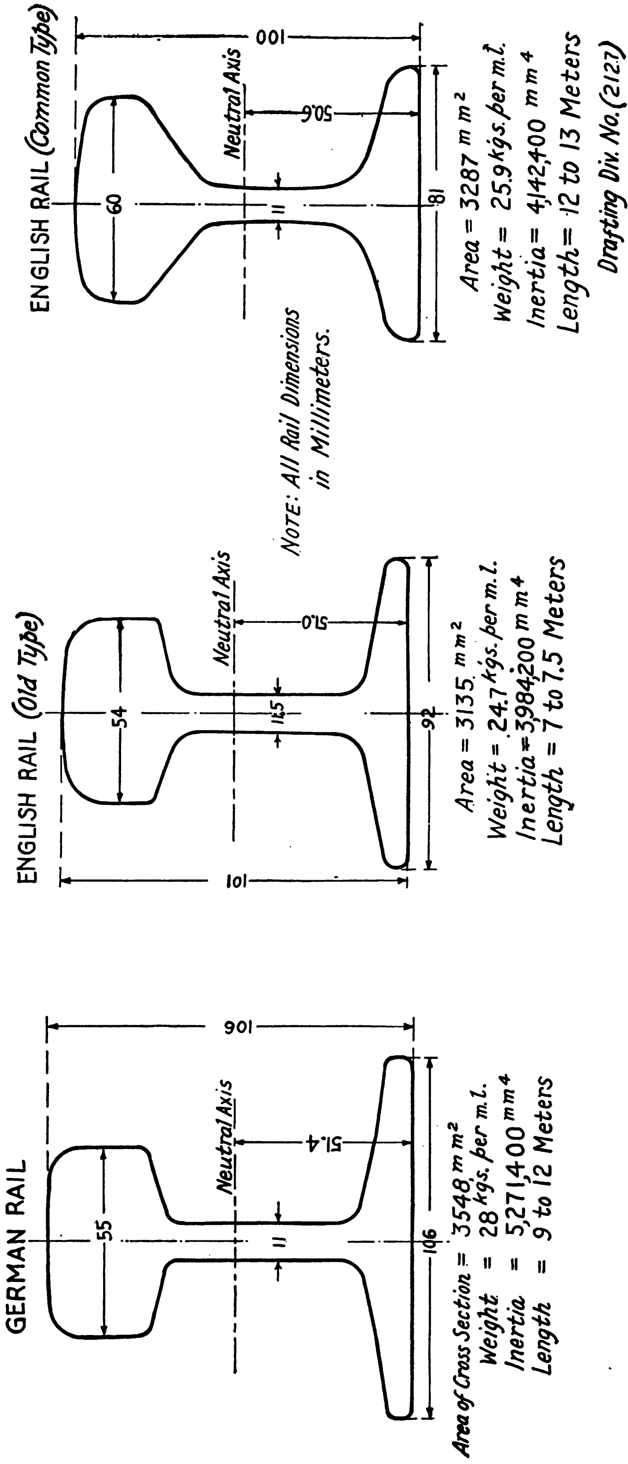
Kilometer 24: Unlined, through rock, 46 meters in length.

Kilometer 24.5: Unlined, through rock, 13 meters in length.

Kilometer 25: Unlined, through rock, 27 meters in length.

Kilometer 31.5: Masonry lined, 39 meters in length.

Tunnels are through spurs projecting from mountain ranges on north side of gorge of the Guaire River.


GERMAN RAIL
106
55
11
Neutral Axis
51.4
106
Area of Cross Section = 3548 mm^2
Weight = 28 kgs. per m.l.
Inertia = 5,271,400 mm^4
Length = 9 to 12 Meters
ENGLISH RAIL (Old Type)
101
54
11.5
Neutral Axis
51.0
92
Area = 3135 mm^2
Weight = 24.7 kgs. per m.l.
Inertia = 3,984,200 mm^4
Length = 7 to 7.5 Meters
NOTE: All Rail Dimensions in Millimeters.
ENGLISH RAIL (Common Type)
100
60
11
Neutral Axis
50.6
81
Area = 3287 mm^2
Weight = 25.9 kgs. per m.l.
Inertia = 4,142,400 mm^4
Length = 12 to 13 Meters
Drafting Div. No. (2127)

FERROCARRIL CENTRAL de VENEZUELA

FIG. 23

MOTIVE POWER AND ROLLING STOCK

The locomotives used on the road during the calendar year 1925 included nine of 40 tons, one of 25 tons, and one of 13 tons.

The rolling stock comprised 10 coaches, 6 electric cars, 33 box cars, 27 flat cars, 2 cattle cars, 1 crane car, 1 derrick car, 1 wrecking car, 3 steel ballast cars—a total of 84.

REPAIR SHOPS

Shops are located at Caracas. The capacity for output is limited to the requirements of the line. Several freight and passenger cars have been constructed at these shops.

BOLIVAR RAILWAY

(FERROCARRIL DE BOLIVAR)

SURVEY OF DEVELOPMENT

The Quebrada Railway, Land & Copper Co. (Ltd.) in 1835 first constructed a railroad to serve the Aroa copper mines, which were, however, shut down in 1840. In 1862 an attempt was again made to work the mines, but it ended in failure. In 1872 work again commenced, and service to Barquisimeto from Tucacas, a distance of 55 miles, was established in 1877. The railway is the oldest in Venezuela, with the exception of a short line from Puerto Cabello to El Palito, called the Eastern Railway of Venezuela, which is only 4 kilometers in length. On May 29, 1896, the Bolivar Railway Co. (Ltd.) was organized to take over this railway. On March 1, 1901, the company took over the Southwestern of Venezuela (Barquisimeto) Railway (Ltd.), registered February 28, 1888, to acquire a concession for 99 years from December 15, 1890, from the Venezuelan Government for the construction of a railway about 55 miles in length. Under this concession there was a guaranty of interest; this, however, fell into arrears, and, as an outcome of negotiations, the guaranty was relinquished and the Government transferred to the company certain securities. These securities were not included in the sale of the undertaking to the Bolivar company. In 1911–12 the Venezuelan Government granted a concession for the construction of a branch line 26 miles in length, including exemption from duties upon rolling stock, machinery, etc., imported for its construction and maintenance for a period of 40 years. This branch line was opened to traffic in July, 1916. The Quebrada Railway, 55 miles, and the branch of 26 miles are the property of the company in perpetuity, while the remaining 55 miles, belonging originally to the Southwestern of Venezuela undertaking, are held under a limited concession, as stated.

In November, 1924, this railroad and the Puerto Cabello-Valencia Railway were officially merged, although the Bolivar Railway had controlled practically all the stock of the Puerto Cabello-Valencia Railway for some time. Under the terms of the merger, stockholders in the Puerto Cabello-Valencia Railway are to receive six shares of

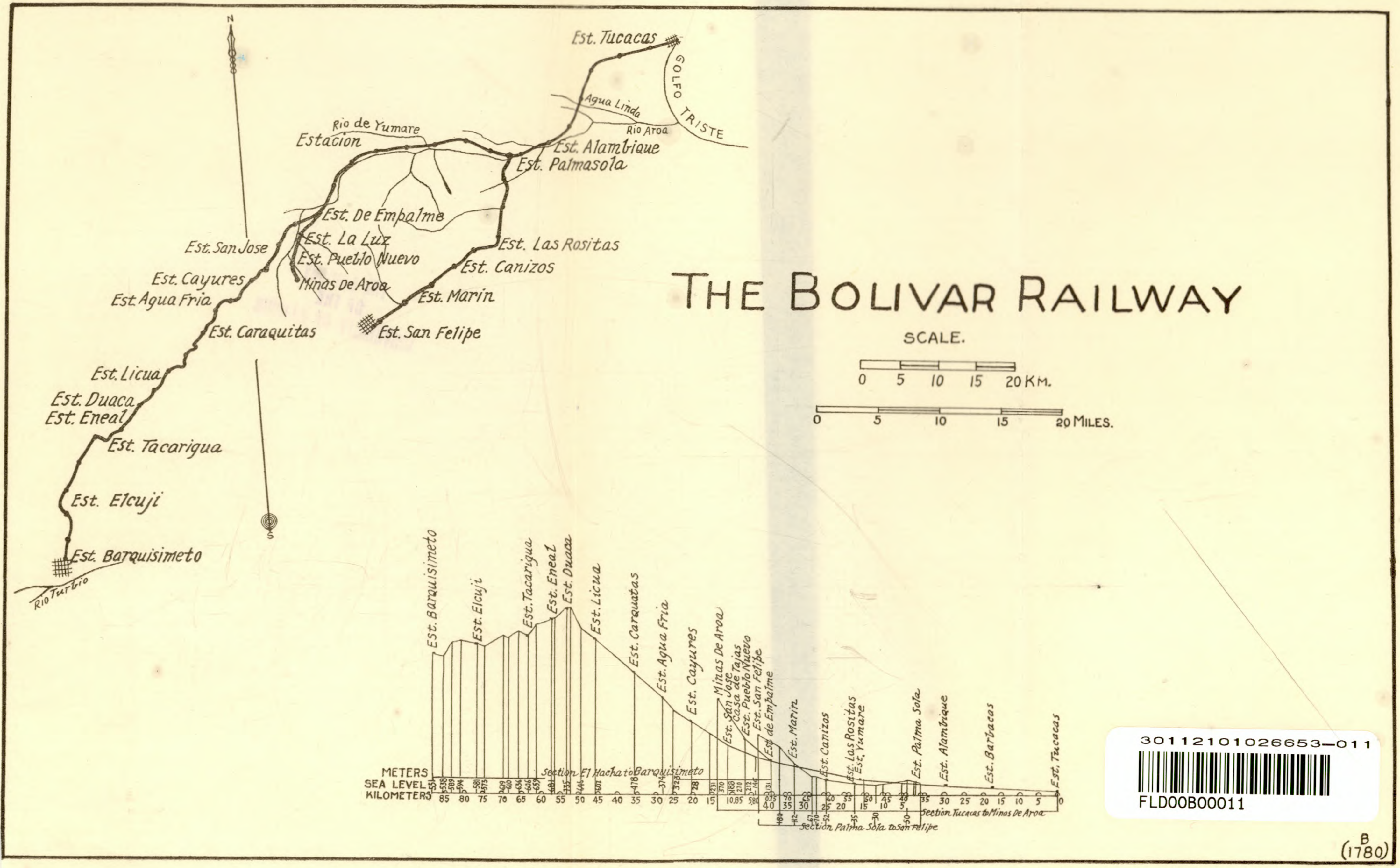


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FIG. 24

the Bolivar Railway stock, the par value of which is £1 a share, in exchange for each share of the Puerto Cabello-Valencia Railway stock, with a par value of £10 a share.

Inasmuch as the two roads differ in gauge, one of them will be altered to correspond with the other. In addition, it is expected that a branch will be constructed from Las Rositas, on the Bolivar Railway, to connect with El Palito, on the Puerto Cabello-Valencia Railway, a distance of approximately 34 miles. This branch will afford through traffic between the two roads and, while it will make the port of Tucacas almost useless, it must be considered that this is an extremely difficult port for ships to enter. Until the construction of this branch has been completed the two roads will still continue to operate under their respective managements.

On January 28, 1926, the following contract was entered into between the Venezuelan Ministers of Finance, of Agriculture, and of Public Works and Charles Arthur Hutchings, general manager of the Bolivar Railway Co.:

Between the Ministers of Finance, of Agriculture, and of Public Works, duly authorized by the President of the Republic in Ministerial Council on one part; and on the other, Mr. Charles Arthur Hutchings, general manager of the Bolivar Railway Co., duly authorized by the general direction of said company, residing in London, the following contract has been agreed to:

ARTICLE 1. The National Government grants to the Bolivar Railway Co. the right to build and operate in perpetuity a railway extension that, starting from a point on the existing branch of the San Felipe Railroad, shall connect with the railway from Puerto Cabello to Valencia at a point called El Palito in conformity with the plans to be presented to the Government for acceptance.

ART. 2. The exclusive concession of this line will be for 40 years, to be reckoned from the date of the opening of the entire length of the line to public service, a privilege conditioned by the provision that the Federal Executive will not grant the right to construct railroads or aerial transportation cableways, that may compete with this line, within an area of 40 kilometers, measured from each side of the line. The area in question may be crossed or cut in any direction by another or other railways or by aerial cableways that do not interconnect the same terminals or intermediate stations to which the contract refers. Railroads necessary for the exclusive service of mining concessions may also be constructed in the same area, in conformity with the law on the matter. All the foregoing without prejudice to the rights granted to the said Bolivar Railway by article 5 of the concession contract, dated May 10, 1887. And the rights granted in this article to the Bolivar Railway Co. are without prejudice to those granted to the Puerto Cabello Railway by the article 1, No. 11, of its contract dated June 7, 1916.

ART. 3. The Government grants to the Bolivar Railway Co. by this concession all the privileges enumerated in article 43 of the railway concession law.

ART. 4. The Government grants to the company the right of property on a tract of public land 60 meters wide over the full length of its line, as well as any other land that may be needed for stations, shops, storehouses, and sidings, without indemnization. It also grants to the company ownership of all public land situated along its line, at the rate of 50 hectares for each kilometer of railroad, according to articles 36, 39, and 40 of the railway law in force.

ART. 5. The company binds itself to begin the construction of the railroad, the object of this contract, within a period of two years from the date of its approval by the National Congress, and to complete it within the five years following the date of the approval of the plans by the Ministry of Public Works. All delays due to unforeseen or other unavoidable causes, duly established, will be compensated by a prorogation equal to the interruption caused.

Art. 6. The Government grants the company the right to take and use without indemnization the waters of any river, ravine, or source adjacent to or crossing its railroad, without prejudice to the rights that other landlords may have to these waters.

Art. 7. The company will be subject to all taxes of a general character for which it may be assessed, but not to the payment of any especially burdensome tax.

Art. 8. The railroad to which this contract refers shall be constructed with a gauge between rails of 1 meter 7 centimeters. The rails shall be of steel of the Vignola type, weighing about 27½ kilos per linear meter; and the sleepers shall be of hardwood, iron, or steel and placed at least 1 meter from center to center.

Art. 9. The total length of this railroad, which is about 54 kilometers, will be divided into five sections of more or less equal length, and the Government grants to the company the right to open to public service each of these sections that are to be constructed as soon as terminated and after being inspected and officially accepted.

Art. 10. The company shall establish the tariff on freight and passengers over this line, in accordance with the law in force, and obligates itself not to exceed the following maximum rates:

First-class passenger, 20 bolivars per kilometer.

Second-class passenger, 12 bolivars per kilometer.

Merchandise, ordinary freight, 1 bolivar per ton per kilometer.

Merchandise, special freight for explosives, etc., 1.40 bolivars per ton per kilometer.

Money, one-half of 1 per cent ad valorem.

Art. 11. To carry out the provisions of article 33 of the law of railroad concessions in force, the quantity of 100,000 tons of ordinary freight or its equivalent in gold is fixed as the standard of annual transportation of the proposed railway for the reduction of the tariff provided by the law. The reduction of the tariff shall in no case be greater than necessary in order that the capital of the company may earn 10 per cent annually.

Art. 12. The company reserves the right to charge freight rates by weight or by measure, calculating a cubic meter as equivalent to 1,000 kilos.

Art. 13. The carrying of the mail of the different post offices shall be exempt from all charges over the entire line. The material and other articles belonging to the National Government and to the States through which this line runs, as well as their employees on duty, will pay only half of the rates of the maximum tariff, and troops and war materials one-third. In case of a disturbance of the public peace the tariff for troops and war materials shall be reduced in conformity with the single paragraph of article 34 of the law in force.

Art. 14. There will be a rebate of 50 per cent of the maximum tariff on machinery, tools, and other objects for road construction and maintenance and for transportation companies, as well as for agricultural machinery for the locality served by the railway.

Art. 15. The Government may use for the construction of telegraph or telephone lines, owned by the nation, land granted to the company in virtue of this contract; and the company agrees to set aside in its stations sufficient space for the establishment, at the Government's expense, of offices pertaining to the Government.

Art. 16. Ships carrying nothing but material, machinery, and other equipment for this company, to be unloaded on the docks of Puerto Cabello, shall be exempt from any national tax, and ships carrying such goods to be unloaded in the Bay of Tucacas shall enjoy the same privilege. These ships must call first at Puerto Cabello to request and obtain the corresponding permit in conformity with the treasury law.

Art. 17. As the railway to which this contract refers is a public utility, it is declared as such, and, consequently, if for the construction of this line the company should need to occupy lands of private property and could not come to an agreement with their owners it will make use of the right granted it by article 42 of the law of railway concessions.

Art. 18. The company obligates itself to deposit, 12 months after the approval of this contract by the National Congress, the sum of 50,000 bolivars in gold or its equivalent in public-debt bonds, at the rate quoted on the market the day the deposit is made, in one of the banks of this city or in a commercial house, as a guaranty for beginning the work and of its completion within the period stipulated in the present contract. This deposit shall be returned to the company upon the termination and acceptance of the first section of the line, in conformity with the law in force.

ART. 19. Considering that the Bolivar Railway Co. obligates itself to construct this railroad to improve the service that its railway now gives to the public, replacing its steamship service established between Puerto Cabello and Tucacas, and to prevent interruption, with the object of harmonizing interests, the company will be permitted to continue with its steamships the passenger and freight service during the time allowed for the construction of the line, the object of this contract, it being understood that this concession is granted to it without any exclusive privilege.

ART. 20. Failure to fulfill the obligations contracted by the company in articles 5 and 18 of this contract shall be sufficient reason for the cancellation, as of right, of this concession, in conformity with the stipulations of the law in force.

ART. 21. In all that which is not stipulated in the text of this contract the company shall be guided by the law and railway service regulations of the Republic now in force.

ART. 22. This contract may be transferred to any other person, but the transfer may not be effected without the previous consent of the National Government.

ART. 23. Doubts and controversies of any character that may arise relative to this contract, and that can not be settled by the contracting parties, shall be decided by the competent tribunals of Venezuela, in conformity with its laws, and for no motive or cause can they be made the basis of foreign claims.

ART. 24. Copy duly certified by the director of communications and aqueducts of the Ministry of Public Works shall be kept in the appropriate archives, and the original shall be delivered to the contractor.

Done at Caracas on the 28th day of the month of January, 1926. Year 116 of the independence and 67 of the federation.

M. CENTENO GRAU.
ANTONIO ALAMO.
TOMAS BUENO.
CHARLES ARTHUR HUTCHINGS.

At the present time the road runs from Tucacas to Barquisimeto, a distance of 102 miles, with a branch of 8 miles to the Aroa mines and also a branch from Palma Sola to San Felipe, a distance of 26 miles. The total mileage of the road is 130.

For a description of the Puerto Cabello-Valencia Railway, see page 370.

FINANCES

The following facts concerning the finances of the company are from the Stock Exchange Yearbook for 1925:

The company on June 30, 1924, had an authorized share capital of £1,300,000; issued and paid up £1,223,241 (excluding £50,000 lodged as collateral security for bank overdraft of £12,178 at December 31, 1923); share capital was increased from £500,000 to £1,000,000 in 1901, to £1,102,480 (by creation of £102,480 6 per cent preference) in July, 1920, and to £1,300,000 (by creation of £197,520 6 per cent preference) in June, 1924.

Six hundred and eighty-three thousand two hundred pounds ordinary shares of £1, fully paid, part of a total authorized of £700,000. Quoted in the official list; latest price, 8/32.

Two hundred and ninety-two thousand eight hundred pounds 5 per cent noncumulative preference shares of £1, fully paid, part of total authorized of £300,000 ranking for a dividend and capital before the 6 per cent preference shares. As to dividends paid see under accounts below. Quoted in the official list; latest price, 5/8.

Two hundred and forty-seven thousand three hundred and fifty pounds 6 per cent noncumulative preference shares of £1, fully paid, ranking for capital and dividend after the 5 per cent noncumulative preference shares in priority to the ordinary shares, issued—£102,480 as fully paid in July, 1920, as bonus to ordinary shares held, and £144,870 in exchange for shares of Puerto Cabello & Valencia Railway Co. (Ltd.), under offer described in paragraph 1 above. Authorized, £300,000. Price in supplementary list, 10s. 9d.

Two hundred and seventy-three thousand two hundred and forty-one pounds 6 per cent debenture stock (part of £400,000 authorized), with interest payable March 1 and September 1, and the principal repayable, at the option of the company, on six months' notice (now) at any time, at 5 per cent premium, the security being a floating charge on the property, net proceeds of any sales to be applied to redemption of debenture stock. The trust deeds (1896 and 1901) provide for a specific charge on the company's land, but late in 1921 the stockholders agreed to forego this specific charge in order to facilitate land sales. Trustees, J. M. MacDonald, Viscount St. Davids. A further £50,000 of the stock is lodged with bankers as security for overdraft. Quoted in the official list: latest price, 88.

The accounts are now made up annually to December 31, and submitted in May or June. The first dividend was in respect of 1904–5, for which year 3 per cent was paid on the 5 per cent preference shares; for 1905–6 3 per cent was again paid on the preference shares; for 1906–7, 2 per cent; for 1907–8, nil; for 1908–9, 3; for 1909–10, 3½; for 1910–11 and 1911–12, the full rate of 5 per cent each year, but nothing on the ordinary; and for 1912-13 the ordinary shares received 2 per cent. For 1913-14 the full rate on the 5 per cent shares (preference) was declared, and for 1914-15, 3 per cent, but as the cash necessary for these payments was not then available, the money being required for construction purposes, resolutions were passed in November, 1915, whereby the company was authorized to issue script certificates for 8 per cent in full satisfaction of the 8 per cent dividend due, and these certificates, which amounted to £23,241, were, in March, 1920, exchanged for a similar amount of 6 per cent debenture stock. For the four and a half years to December 31, 1919, the full dividend was paid each year on the 5 per cent preference shares, but nothing was paid on the ordinary shares until in July, 1920, when a bonus distribution of 15 per cent in 6 per cent noncumulative preference shares was made out of undivided profits and reserves. In respect of 1920, the full 5 per cent was paid on the 5 per cent preference, and a half year's dividend (3 per cent actual) was distributed on the 6 per cent preference, but nothing on the ordinary; for 1921, 2¾ per cent only was paid on the 5 per cent preference; for 1922, 2; for 1923, full dividends of preference. Reserve for depreciations, £40,000; net revenue account balance, £7,874. "Estate development" stands as an asset for £15,182, and in 1923 there was a loss on working under this heading of £1,049 (charged to profit and loss). Gross receipts, January 1 to December 31, 1924, £143,054 (increase, £17,519). Interim dividend, 1924, 2½ per cent on 5 per cent preference in November.

A comparison of the road's income and expense accounts for the calendar years ended December 31, 1917, to 1923, inclusive, is as follows:

Years	Income		Expenses	
	Bolivars	U. S. currency	Bolivars	U. S. currency
1917	3, 371, 319	$650, 665	1, 912, 409	$369, 095
1918	2, 576, 708	495, 512	1, 848, 323	355, 446
1919	2, 887, 160	557, 222	2, 068, 768	399, 272
1920	2, 530, 917	488, 467	2, 217, 097	427, 900
1921	2, 569, 400	495, 894	2, 329, 857	449, 662
1922	2, 333, 311	450, 329	2, 256, 099	435, 427
1923	2, 762, 111	533, 087	2, 162, 649	417, 391
1924	3, 125, 994	601, 150	2, 400, 032	461, 540
1925	3, 293, 854	633, 433	2, 321, 304	446, 404

The following statement shows more in detail the character of the traffic and the income therefrom during 1923:

Passengers:		
First class	number	2, 679
Second class	do	26, 280
Total	do	28, 959
Income from passengers:		
First class	bolivars	36, 383
Second class	do	120, 628
Total	do	157, 011
Income from freight	do	2, 605, 101
Total income	do	2, 762, 111
Outgo	do	2, 162, 649
Balance	do	599, 462
Freight, detailed, income from:		
Merchandise	do	1, 279, 169
Fruit	do	860, 998
Construction material	do	155, 328
Animals	do	2, 947
Miscellaneous	do	306, 658
Total freight	do	2, 605, 100

TRAFFIC STATISTICS

The following table shows the number of passengers and tons of freight carried during the years 1917, 1919, 1920, 1921, 1922, 1923, 1924, and 1925:

Years	Number of passengers carried	Tons of freight carried
1917		76, 982
1919	24, 408	38, 820
1920	27, 080	30, 697
1921	26, 124	43, 314
1922	28, 277	55, 575
1923	28, 959	100, 803
1924	29, 176	94, 537
1925	32, 323	108, 478

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road are as follows:

President, J. S. Austen, Dashwood House, New Bond Street, London, E. C.
Vice president, N. G. Burch, 16 Finsbury Circus, London, E. C.
Secretary, J. T. Dillon, Dashwood House, New Bond Street, London, E. C.
General manager and resident engineer, C. A. Hutchings, Aroa, Venezuela.
Secretary to general manager, T. K. Monk, Aroa, Venezuela.
Accountant, E. R. Aikman, Aroa, Venezuela.
Storekeeper, C. E. Pardo, Aroa, Venezuela.
Traffic manager, E. H. Joubert, Aroa, Venezuela.
Locomotive superintendent, C. H. Carstens, Aroa, Venezuela.

Purchases are generally made through the foreign office of the company. However, anyone wishing to sell to the company should write, in English, to C. A. Hutchings, general manager and resident engineer, Aroa, Venezuela.

RIGHT OF WAY

Altitude.—The maximum altitude above sea level is at Duaca—725 meters.

Gauge.—The present gauge is 2 feet.

Grades.—The maximum grade on the road is 5.27 per cent.

Curves.—The minimum radius of curves is 46.83 meters.

Ballast.—Crushed stone is used as ballast.

Ties.—Both wood and steel ties are used on the road. The wood ties are obtained locally, while the steel ties are obtained from England.

Rails.—Rails weighing 48 pounds to the yard are used.

Water.—Water is obtained from the several small rivers of the district. The distances between the stations in kilometers are as follows: 21, 9, 7, 15, 23, 11, 10, 7, 7, 6, 6, 6, 5, 7, 13, 10, 7, 3, 4, 17, 6, 9, 10—average, 9½.

Fuel.—Oil obtained from the Caribbean Petroleum Co. of Puerto Cabello, is used as fuel. It is sent from Puerto Cabello to Tucacas in a small motor tank vessel owned by the railroad company. Fuel stations are the same distance apart as shown for water stations. At the present time there are no plans for electrification or other change in fuel.

Maintenance.—All parts of the roadbed and track are kept in sufficiently good repair to accommodate as heavy traffic as they were designed to carry.

Bridges.—There are 518 bridges and viaducts, having a total length of 2,119 meters.

Tunnels.—There are no tunnels on the road.

MOTIVE POWER AND ROLLING STOCK

For the calendar year 1924 there were 18 locomotives, having an average weight of 23 tons each, and 347 cars. Of the cars 69 were flat cars, 61 box cars, and 125 stock cars.

REPAIR SHOPS

There are four repair shops, located at Aroa, Tucacas, San Felipe, and Barquisimeto. These shops are equipped with power-driven machine tools of various types and sizes.

PUERTO CABELLO-VALENCIA RAILWAY

(FERROCARRIL DE PUERTO CABELLO A VALENCIA)

The history of this company dates from September 26, 1885, when it was registered in London, England, for the construction of a line connecting Puerto Cabello with Valencia. The concession was valid for 99 years from the completion of the line, and the Government guaranteed for the entire period 7 per cent annually on a capital of £820,000. In 1891 the shareholders agreed to a reduction in guaranty to 5 per cent, beginning January 1, 1891. The road was constructed and opened to traffic in April, 1888. The Government guaranty fell in arrears, and at the end of 1902 the company's claim against the Venezuelan Government was £261,440, exclusive of interest, while the Anglo-Venezuelan Mixed Commission awarded £231,794, of which nearly one-half was received during 1904, £43,776 in 1905, £48,355 in 1906, and the remainder in 1907; on the basis laid down by the commission the company's claims on the Government in respect of the guaranty for the 13 years to 1915 were, together, £350,760, and this claim was liquidated by a cash payment of £190,000 in July, 1916, the company agreeing that this sum should include the cancellation of all past and future guaranty claims on the Government. The road is now controlled by the Bolivar Railway Co. It is planned to connect this road with the Bolivar Railway by a branch from El Palito to Las Rositas. Further information on this subject can be found in the section devoted to the

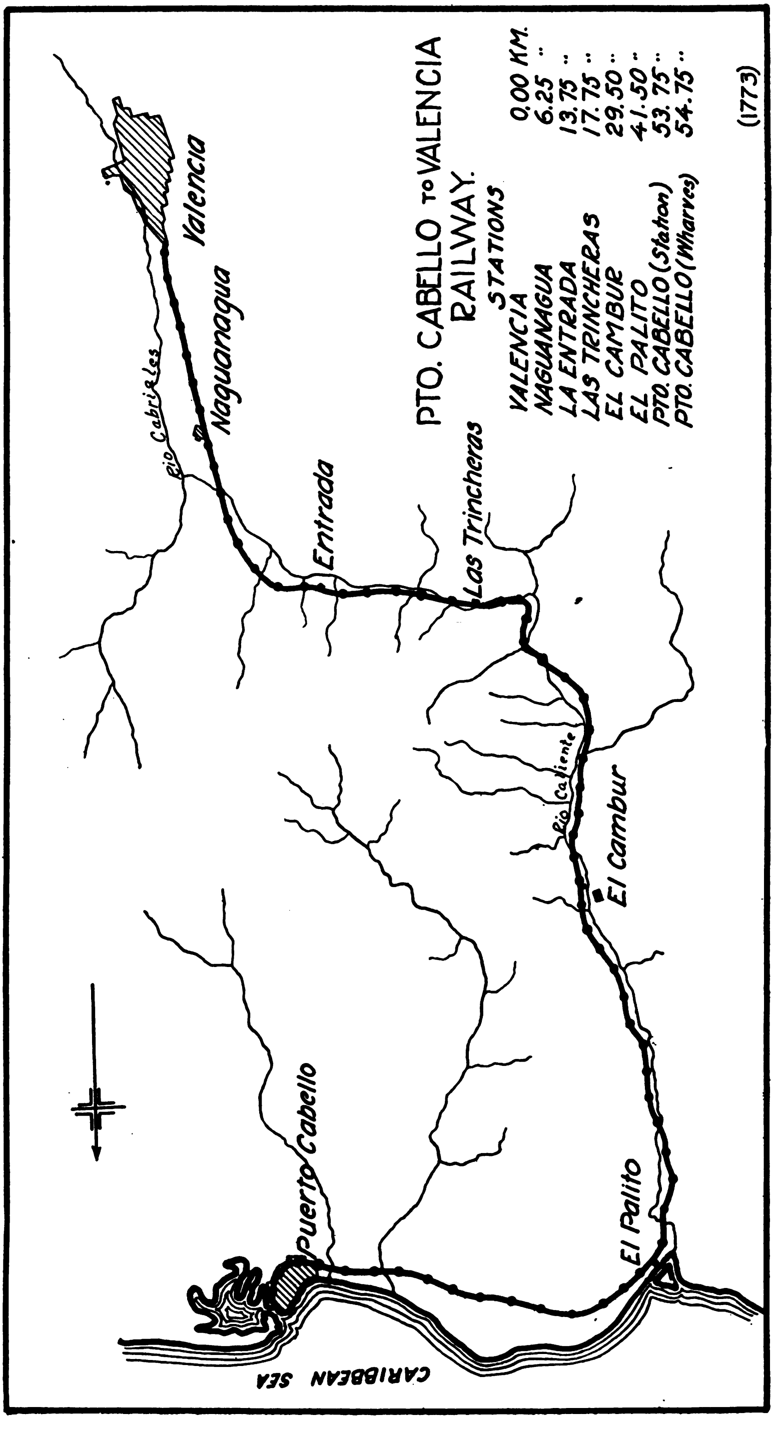

PTO. CABELLO TO VALENCIA
RAILWAY.
STATIONS
VALENCIA 0.00 KM.
NAGUANAGUA 6.25 "
LA ENTRADA 13.75 "
LAS TRINCHERAS 17.75 "
EL CAMBUR 29.50 "
EL PALITO 41.50 "
PTO. CABELLO (Station) 53.75 "
PTO. CABELLO (Wharves) 54.75 "
(1773)
Valencia
Naguanagua
Rio Cabriales
Entrada
Las Trincheras
Rio Caliente
El Cambur
Puerto Cabello
El Palito
CARIBBEAN SEA

FIG. 25

Bolivar Railway. The road at the present time is 55 kilometers in length, connecting Puerto Cabello with Valencia, climbing over a mountain pass nearly 2,000 feet in height. It is estimated that it cost £70,000 per kilometer to construct. Motor competition with this railway is increasing yearly because of the building of good roads.

According to the Stock Exchange Yearbook for 1925, the finances of the road are as follows:

The authorized capital is £460,000, all of which is issued and paid up, and the total borrowing powers of £360,000 have been exercised to the extent of £350,000, £180,000 being now outstanding. At December 31, 1923, there was a credit balance on capital account of £10,000. Second-charge 5 per cent debenture stock for £170,000 was redeemed in March, 1917 (at par), out of the sum received from the Venezuelan Government in July, 1916, in settlement of arrears of guaranty, holders renouncing all claim to accrued interest amounting to £68,000.

Four hundred and sixty thousand pounds shares of £10, fully paid; £393,450 held by Bolivar Railway Co. (Ltd.), which acquired £152,000 in 1918 and in 1924 offered six fully paid £1 6 per cent preference shares for each remaining Puerto Cabello £10 share. Authorized, £460,000.

One hundred and eighty thousand pounds first-charge 5 per cent coupon bonds to bearer, of £50 and £100 each, with coupons payable January 1 and July 1, and the principal repayable January 1, 1955, with power to the company to redeem them at par at any time on 12 months' notice. The total amount authorized is £190,000. Trustees, G. R. T. Upton and P. C. Quilter. Interest has been paid to date. Price in official list, 74.

Accounts to December 31, submitted May. Dividends: 1917, 1¼ per cent; 1918, nil; two years to 1920, 2½ each year; two years to 1922, nil; 1923, 2½. Reserve, £9,629; renewal funds, £19,471; sundry credit balances, £4,999; carried forward, £50. Gross earnings January 1 to November 30, 1924, £56,000 (increase, £6,750).

The road is owned and operated by an English company, with offices at Finsbury Pavement House, London, E. C. 2. The general manager in Venezuela is W. A. Little. Purchases for the road are made through the home office of the company on the approval of Mr. Little, who is stationed at Valencia.

Altitude.—The road runs from sea level to 1,952 feet.

Gauge.—The gauge of the road is 3.5 feet.

Grades.—Excluding the rack-rail section of the road, which is 4 kilometers in length between kilometers 13 and 17 from Valencia, and has a grade of 8 per cent, the steepest gradient on the road is 3½ per cent. It is planned to abolish this rack-rail section by the construction of a detour of about 7 miles with a maximum grade of 3½ per cent.

Curves.—The minimum curve radius is 91.5 meters.

Ballast.—Crushed rock is used for ballast.

Maintenance.—The road is kept in sufficiently good repair to withstand the traffic it is required to bear.

Rails.—Rails weigh 55 pounds to the yard, except in the rack-rail section, where the weight is 70 pounds to the yard.

Fuel.—Venezuelan coal, obtained from mines at Coro, is used as fuel. The rack-rail section uses oil for fuel. No plans have been made for electrification.

Bridges.—There are 35 bridges and viaducts, with a combined length of about 1,000 meters.

Tunnel.—There is one tunnel of 76 meters, cut through solid rock.

For the calendar year 1925 the road had 10 locomotives of British manufacture, 13 passenger cars, 26 flat cars, 43 box cars, and 28 stock cars. The freight cars have a capacity of 15 tons each.

One repair shop, located in Valencia, is capable of taking care of the repairs for the company.

The following is a statement of the finances and traffic of the road for the years indicated:

Years	Number of passengers	Passenger revenue	Traffic carried	Total income	Total expenses
		Bolivars	*Kilos*	*Bolivars*	*Bolivars*
1913	29,061	191,982	31,182,045	1,125,256	563,872
1914	30,960	168,885	30,166,789	1,011,736	580,166
1915	27,184	152,936	36,993,921	1,091,464	642,160
1916	28,595	156,099	36,819,176	1,008,672	629,151
1917	39,748	221,199	54,063,144	1,262,698	717,320
1918	41,288	178,814	53,701,000	1,210,661	718,168
1919	53,990	230,000	55,120,762	1,472,061	823,706
1923	65,614	215,715	40,675,000	1,168,917	831,723
1924	102,701	343,194	48,654,000	1,237,835	919,644
1925	103,440	208,333	77,394,000	1,487,427	898,647

LA CEIBA RAILWAY

(GRAN FERROCARRIL DE LA CEIBA)

The history of this road dates from contracts entered into by the Government in 1880 and 1888 with Benito Roncajole for the construction of a railway running from La Ceiba to Motatan, a distance of 88 miles. By 1895 certain sections of the road were opened to traffic. On May 30, 1924, the company received a contract by which it secured the right to import all material free of duty for 25 years and, in exchange for this right, agreed to extend its lines. The proposed extensions are from the end of the present main line at Motatán to the town of Valera, a change in the line from Sabana de Mendoza to Motatan so that it will run through the town of Betijoque, and later a continuation through to Timotes. The road at the present time is 81.36 kilometers in length, with one branch of 3.67 kilometers to a sugar central known as La Ceiba. The road connects at Motatan with a cart road leading to Valera, a distance of 6 miles from Trujillo.

The operating officials of the road for the calendar year 1924 were: General manager, Alberto Roncajole, Maracaibo, Venezuela; chief engineer, Vicente Corso, Maracaibo, Venezuela.

Purchases for the road are made directly through the office of the road at Maracaibo or through Mecke & Co., room 204, 7 Hanover Street, New York City, who are purchasing agents for the road.

The road is capitalized at 8,000,000 bolivars, issued in shares having a par value of 500 bolivars each. At the present time these shares are quoted on the Maracaibo Stock Exchange at 375 to 385 bolivars. The construction of the road cost approximately 98,328 bolivars per kilometer. A statement of the road's traffic movement for the fiscal year April 1, 1924, to March 31, 1925, is given below:

Items	Quantity	Receipts, in bolivars	Items	Quantity	Receipts, in bolivars
Passengers:			Freight—Continued.		
First class ____ number	2,576	36,669	Miscellaneous ____ kilos	10,243,109	277,595
Second class ____ do	13,140	81,700			
			Total ____ do	26,595,512	1,278,760
Total ____ do	15,716	118,369			
			Animals ____ number	1,204	2,949
Freight:			Express. number of trains	20	4,455
Merchandise ____ kilos	4,124,518	269,587	Money transported. value	1,315,500	3,289
Fruits ____ do	12,092,931	730,232	Electric railway (gross revenues)		10,263
Construction materials ____ kilos	134,954	1,346	Other services		9,676

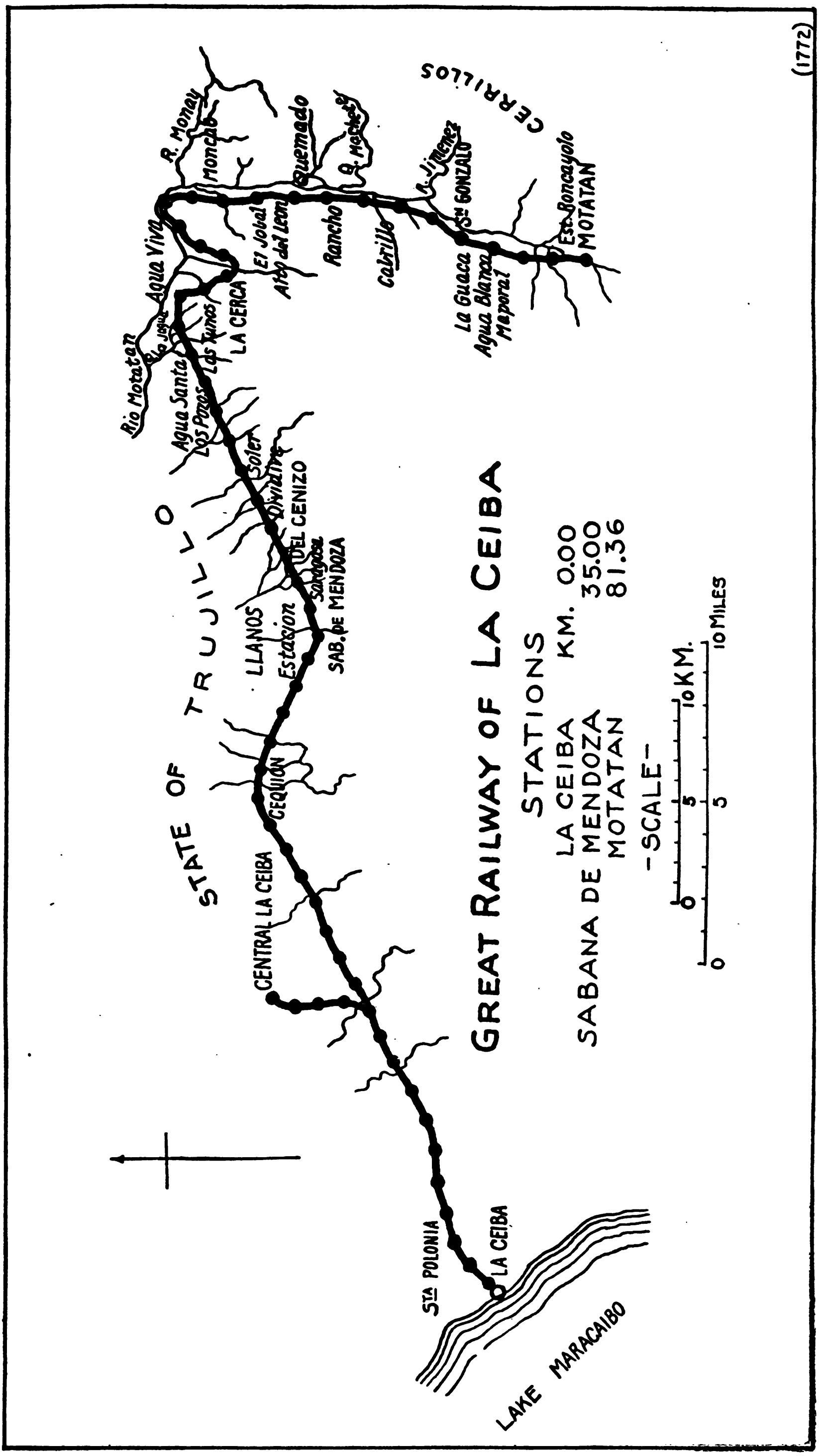

(1772)
GREAT RAILWAY OF LA CEIBA
STATIONS
LA CEIBA KM. 0.00
SABANA DE MENDOZA 35.00
MOTATAN 81.36
-SCALE-
0 5 10 KM.
0 5 10 MILES
STATE OF TRUJILLO
LAKE MARACAIBO
CERRILLOS
STA POLONIA
LA CEIBA
CENTRAL LA CEIBA
CEQUION
LLANOS
Estacion
SAB. DE MENDOZA
Saragoza
DEL CENIZO
Divisiva
Soler
Los Pozos
Agua Santa
Rio Motatan
Las Tunos
LA CERCA
Agua Viva
R. Monay
Moncab
El Jobal
Alto del Leon
Quemado
Rancho
Q. Machete
Cabrillo
R. Jimenez
Sta GONZALO
La Guaca
Agua Blanca
Maporal
Est. Boncayolo
MOTATAN

FIG. 26

The following statement shows the revenues, expenditures, and profits during the fiscal year 1925:

REVENUES

	Bolivars
Balance of the account "set aside for foreign purchases" which remains from the last fiscal year	40, 820
Undivided residue of the "profit and loss" account of the preceding fiscal year	22, 619
Passengers (15,716)	118, 369
Freight (26,595,512 kilos)	1, 278, 760
Animals (1,204)	2, 949
Express trains (20)	4, 455
Money carried (1,315,500 bolivars)	3, 288
Other revenues	19, 939
Rentals	1, 091
Interest	14, 180
Commissions	2
Exchange	343
Storage	146
Sale of useless materials	3, 343
Reimbursable expenditures	14, 593
Total	1, 524, 898

EXPENDITURES AND PROFITS

Furniture (depreciation 10 per cent)	603
Material, fixed and rolling	56, 078
Advertisements	496
Expenses of operation	180, 159
General ordinary expenses	212, 247
Repair shop at La Ceiba	56, 373
Expenditure for upkeep	146, 868
General extraordinary expenditures	13, 911
Reserve fund 5 per cent	41, 777
Special reserve fund 1 per cent	8, 355
Set aside for foreign purchases	178, 429
Dividends	576, 000
Undivided residue of "profits and losses" on hand	53, 601
Total	1, 524, 898

RÉSUMÉ

		Bolivars
Gross profits of the year		835, 543
	Bolivars	
Reserve fund of 5 per cent deducted	41, 777	
Special reserve fund of 1 per cent	8, 356	
		50, 133
		785, 410
Addition of the undivided residue of "gains and losses" of the preceding year		22, 619
		808, 029
	Bolivars	
Nine dividends of 64,000 bolivars each paid out during the year	576, 000	
Sum set aside for foreign purchases	178, 429	
		754, 429
		53, 600

The seven dividends which were distributed, a total of 576,000 bolivars, represent an interest of 7½ per cent on the capital of the company.

Altitude.—The road runs from 16 meters above sea level at La Ceiba to 324 meters at Motatan, the highest point on the road.

Gauge.—The gauge is 3 feet.

Grades.—The maximum grade is 3 per cent. There are eight steep grades of 1.33 per cent, which are from 1 to 1½ kilometers in length.

Curves.—The minimum curve radius is 80 meters.

Ties.—Ties used are mainly of wood, although a few concrete ties are used. Ties are spaced at distances of 75 centimeters.

Rails.—Rails weighing 40 pounds per yard are used.

Maintenance.—The roadbed and track are in sufficiently good repair to accommodate the traffic they are required to bear.

Bridges.—There are 37 bridges, with a total length of 1,356 meters.

Tunnels.—There are no tunnels on the road.

The motive power and rolling stock of the road at December 31, 1924, were as follows:

Locomotives.—One of German and eight of American make. The cylinders of the American locomotives are of the two types, 6 by 10 inches and 10 by 16 inches. The German locomotive has a cylinder of 12 by 16 inches.

Rolling stock.—Box cars, 40; flat cars, 11; stock cars, 2; passenger cars, 8; total, 61. Most of the freight cars are 10-ton cars of American manufacture, while the passenger cars are 50 feet long and of double truck. The coaches were constructed in the company's own shops out of native wood.

Link-and-pin couplers, with center of draw pockets 15½ and 18½ inches above top of rail at front and rear, are used.

The road has one repair shop at La Ceiba, which is considered to be fairly well equipped.

GREAT RAILWAY OF VENEZUELA

(GRAN FERROCARRIL DE VENEZUELA)

SURVEY OF DEVELOPMENT

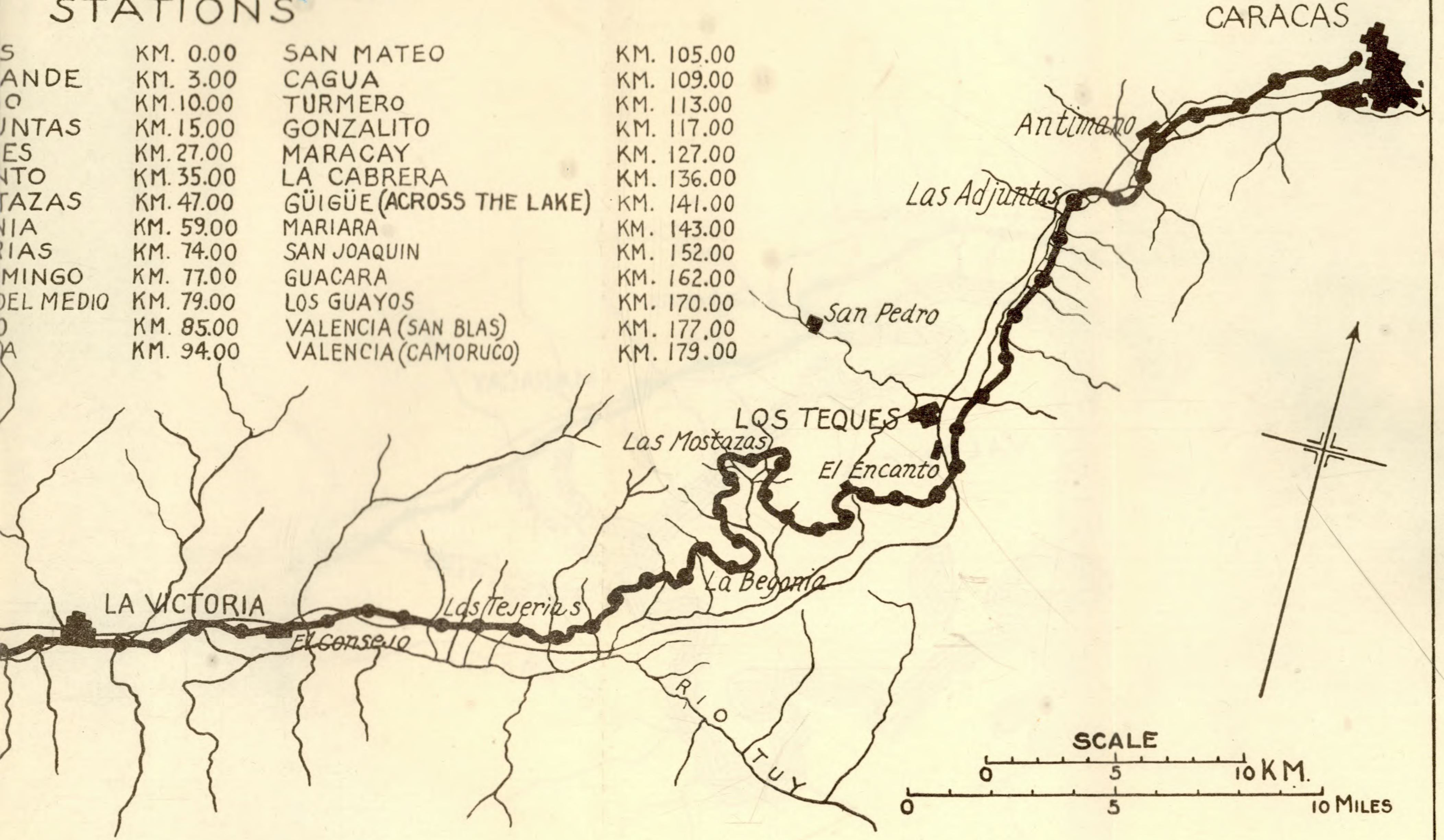
The concession for the Gran Ferrocarril de Venezuela was granted in 1887 to Friedrich Krupp, of Essen, who transferred the concession to the German company "Grosse Venezuela Eisenbahn-Gesellschaft" (Great Venezuelan Railway Co.) in 1888. This company was established with a capital of $2,500,000 (gold dollars), aided by the Diskonto Gesellschaft, of Berlin, and the Norddeutsche Bank, of Hamburg.

According to the original contract the Government engaged to pay 7 per cent on £12,800 per kilometer of the first section (Caracas-Cagua). In 1891 a new contract was granted, according to which the Government engaged to pay 7 per cent on £11,000 per kilometer of line. On February 1, 1894, when the line was inaugurated, the company claimed $1,114,703 (gold dollars) for the Valencia-Cagua section, $578,525 for the Caracas-Cagua section, and $366,800 for alleged damages. In 1894 a new agreement was concluded and a considerable part of the claims was settled by arbitration. In 1896, according to another agreement, the Diskonto Gesellschaft, of Berlin, issued a Venezuelan loan of $10,000,000, bearing 5 per cent with 1

WAY OF VENEZUELA

STATIONS

S	KM. 0.00	SAN MATEO	KM. 105.00
ANDE	KM. 3.00	CAGUA	KM. 109.00
O	KM. 10.00	TURMERO	KM. 113.00
UNTAS	KM. 15.00	GONZALITO	KM. 117.00
ES	KM. 27.00	MARACAY	KM. 127.00
NTO	KM. 35.00	LA CABRERA	KM. 136.00
TAZAS	KM. 47.00	GÜIGÜE (ACROSS THE LAKE)	KM. 141.00
NIA	KM. 59.00	MARIARA	KM. 143.00
RIAS	KM. 74.00	SAN JOAQUIN	KM. 152.00
MINGO	KM. 77.00	GUACARA	KM. 162.00
DEL MEDIO	KM. 79.00	LOS GUAYOS	KM. 170.00
O	KM. 85.00	VALENCIA (SAN BLAS)	KM. 177.00
A	KM. 94.00	VALENCIA (CAMORUCO)	KM. 179.00



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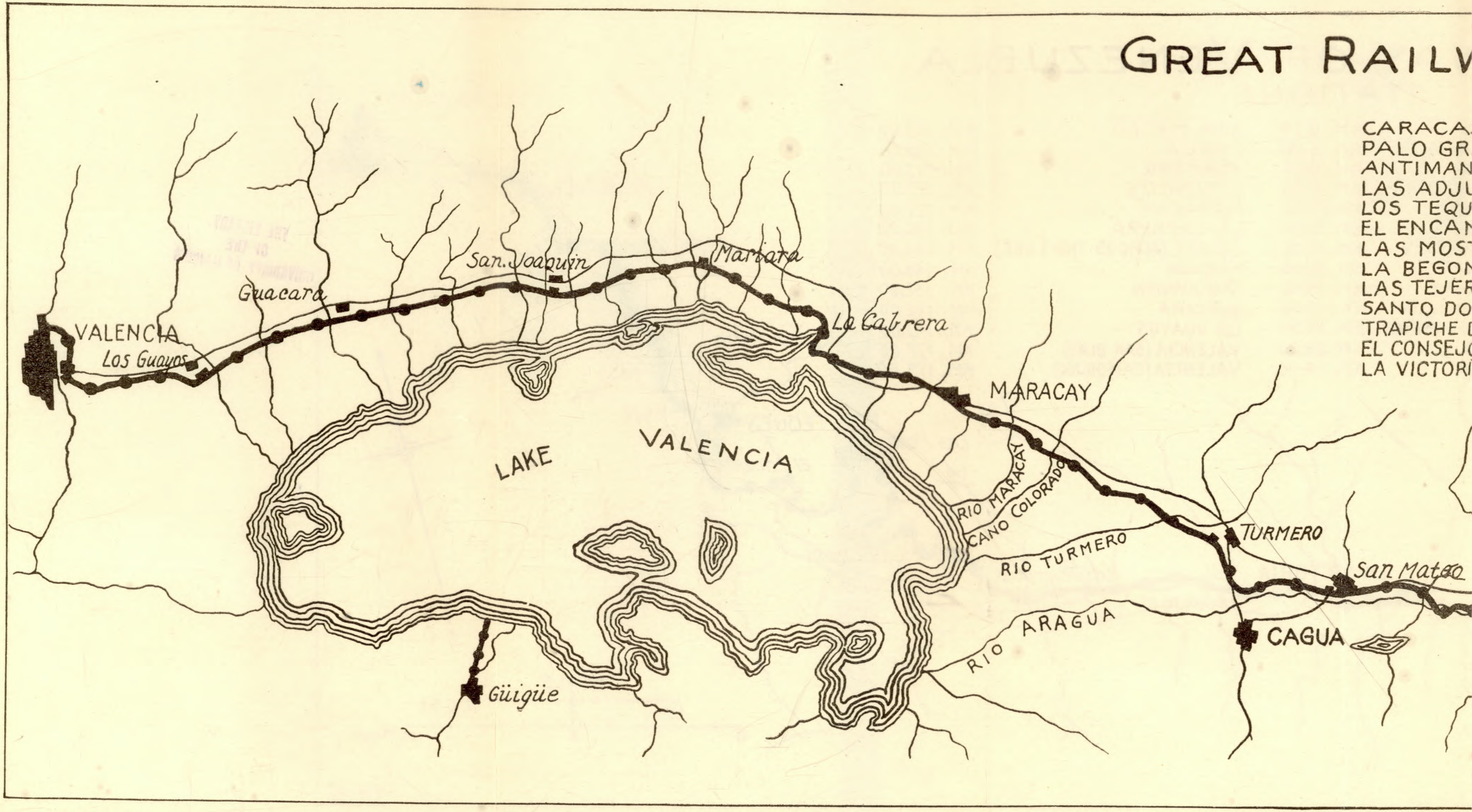
GREAT RAILW
CARACA
PALO GR
ANTIMAN
LAS ADJU
LOS TEQU
EL ENCAN
LAS MOST
LA BEGON
LAS TEJER
SANTO DO
TRAPICHE
EL CONSEJO
LA VICTORI
VALENCIA
Los Guayos
Guacara
San Joaquin
Mariara
La Cabrera
MARACAY
LAKE VALENCIA
RIO MARACAY
CANO COLORADO
RIO TURMERO
TURMERO
San Mateo
RIO ARAGUA
CAGUA
Güigüe

FIG. 27

per cent sinking fund, the loan to be issued at 80 per cent of par and the Government to appropriate $600,000 per annum for the service of the loan. Of this loan $7,200,000 in bonds were handed over to the railroad company in full settlement of all claims. Arrears of settlement brought the matter to a climax when Germany participated in the "naval demonstration" that took place in 1903. The matter was finally adjusted by diplomatic intervention resulting in the Venezuelan Government's agreeing to pay £1,400,000 on condition of being exempted from future obligations. In 1924 the road was transferred from the original German company to a Spanish company under the name of Compañía de Ferrocarriles Sudamericanos. The road continues to be known under its German name and is still operated by German management.

It is known as the most costly railway in Venezuela, as it cost $15,135,492 to construct, or an average of $85,226 per kilometer.

The main line at the present time is 179 kilometers in length and connects Caracas, the capital of the Republic, with Valencia, capital of the State of Carabobo.

The road also has one branch in operation from the mouth of the River Guigue to the town of Guigue, a distance of 4.81 kilometers. No additional extensions are planned for the near future.

OPERATING OFFICIALS AND PURCHASES

The operating officials of the road for the calendar year ended December 31, 1925, were: General manager, Felix Kettner, Caracas, Venezuela; traffic manager and chief accountant, R. A. Braun, Caracas, Venezuela.

Purchases for the road are practically all made through the Berlin agents of the company—Bahnmaterial Beschaffungs G. m. b. H., Berlin, Germany. The purchasing agents in the United States are the Ultramares Corporation and P. R. Rincones, jr., New York City.

FINANCES

The following is a comparative statement showing the finances and traffic of the road for the years mentioned:

Years	Gross revenue	Operating expenses	Net revenue	Number of passengers carried	Passenger revenue	Metric tons of freight carried	Freight revenue
	Bolivars	*Bolivars*	*Bolivars*		*Bolivars*		*Bolivars*
1913	2, 860, 234	1, 595, 664	1, 264, 570	194, 310	1, 081, 075	42, 940	1, 779, 159
1925	4, 287, 082	2, 316, 087	1, 970, 995	238, 005	1, 201, 552	82, 514	3, 085, 530

The principal items of freight carried were livestock, coffee, corn, and cotton. The latest balance sheet for the road, which is for December 31, 1924, follows:

ASSETS

	Pesetas
Buildings:	
Stone	892, 746
Wooden	773, 185
Purchases of land, special constructions	10, 146, 743
Rolling stock	2, 453, 799
Stationary machinery	616, 586
Rails	6, 064, 173
Telegraph, telephone, and signal apparatus	41, 809
Guigue tramway	1
Steamers	1
Land	52, 708
Land for rent	108, 602
Plantations	63, 899
Materials in stock	288, 414
Materials to be received	11, 450
Timber	9, 194
Coal	163, 063
Factory	46, 414
Cash	49, 360
Account current	5, 062, 319
Organization expenses	246, 604
Incidentals	111, 844
Total	27, 202, 914

LIABILITIES

Capital stock	21, 000, 000
Current account	232, 311
Savings account	38, 233
Securities	4, 258
Pending bills	4, 838, 281
Profits and losses	1, 089, 831
Total	27, 202, 914

Following is the profit-and-loss account December 31, 1924:

EXPENDITURES

	Pesetas
Operating expenses	2, 933, 628
Amortization	113, 306
Statute expenses	20, 000
Dividend of 4½ per cent	945, 000
Amount to be carried over	11, 525
Total	4, 023, 459

RECEIPTS

Balance of last account	1, 268
Traffic receipts	3, 717, 490
Sundry receipts	304, 701
Total	4, 023, 459

RIGHT OF WAY

Altitude.—The altitude of the road varies from that at Cabrera, 417 meters above sea level, to that at Los Teques, 1,227 meters above sea level, the highest point on the road.

Gauge.—The gauge of the road is 3½ feet.

Grades.—The maximum grade is 2.2 per cent.

Curves.—The minimum curve radius is 75 meters.

Rails.—Rails weighing 47 pounds to the yard, in from 7 to 14 meter sections, are used.

Ties.—Ties spaced on 60-centimeter centers, of steel and concrete, 5¾ feet in length, are used except on switch lines.

Ballast.—Rock ballast of 1 foot depth, with a 6-inch layer of pebbles and gravel, is used.

Water.—Water is obtained locally from small streams and pumped into tanks. There are 14 round tanks, approximately 13 kilometers apart, located along the right of way.

Fuel.—Welsh coal is used for fuel. Coal is mainly stored at Palo Grande, in the suburbs of Caracas. It is planned at the present time to install oil burners in the locomotives. There are no plans for the electrification of the line.

Signaling equipment.—Lights and signal flags are used for signaling.

Maintenance.—All sections of the line are kept in sufficiently good condition to withstand the traffic they are required to bear.

Bridges.—The road has 219 steel bridges and viaducts with a combined length of 4,656 meters. Seventy-three of the bridges are in the stretch between Los Teques and Tejerias. The bridges were made in Germany and the parts jointed together by conical screws instead of rivets. The largest and highest bridge is that of Agua Amarilla, at kilometer 48 from Caracas. This bridge is 106 meters in length and 47 meters high.

Tunnels.—There are 86 tunnels, 6,249 meters in length. Most of these tunnels are located along the first half of the line out of Caracas. The longest tunnel is El Calvario tunnel at Caracas.

MOTIVE POWER AND ROLLING STOCK

For the calendar year 1925 the road had the following motive power and rolling stock in operation:

Locomotives (15 German, 2 British)	17
Cars:	
Mixed passenger cars	32
Flat cars	91
Stock cars	30
Cattle cars	14
Total	167

REPAIR SHOPS

The main repair shop for the road is at Palo Grande. This shop has a foundry with a capacity for casting fairly large pieces. It is well equipped and has three large lathes of German manufacture and one 15-ton crane operated on a track, as well as other modern equipment. In addition there is a small shop at Valencia.

CARENERO RAILWAY

(FERROCARRIL DE CARENERO)

This railway dates from 1884, when, by means of Venezuelan capital, it was constructed to run from the port of Carenero to La Espanola del Guapo, a distance of 54 kilometers. The control of the company afterwards passed successively into the hands of British, Dutch, and French interests until 1899, when it was purchased by the present owners, who are of French and Venezuelan nationality. Originally a governmental subsidy was granted for its construction and operation, but this was canceled by a contract dated April 18, 1896. In addition to the railway, the company owns and operates a passenger and freight steamship service between the port of La

Guaira and Carenero. No additional extensions have been made or are planned.

The railway is capitalized at 4,000,000 bolivars. The present owners were all born in Venezuela and are the sons and daughters of a Frenchman; two of the daughters are married to French citizens.

The following table is a comparative statement showing the finances and traffic of the road for the years indicated:

Years	Gross revenue	Operating expenses	Net revenue	Number of passengers carried	Passenger revenue	Metric tons of freight carried	Freight revenue
	Bolivars	*Bolivars*	*Bolivars*		*Bolivars*		*Bolivars*
1913	250, 067	287, 759	[1] 37, 692	18, 344	38, 132	9, 618	211, 935
1925	401, 081	333, 921	67, 260	14, 488	42, 994	9, 036	358, 087

[1] Loss.

The principal commodities carried are cacao and lumber.

The operating officials for the calendar year 1925 are as follows:

President and general manager, Carlos Crassus, Caracas, Venezuela.
Vice president, Ramon Emilio Crassus, Carenero or Rio Chico, Venezuela.
Chief engineer, C. Odebrett, Carenero or Rio Chico, Venezuela.
Member of board of directors, Luis Rafael Rodriguez.

The owners of the line are Messrs. Crassus, Mrs. Maria Crassus de Firminhac, Mrs. Amelia Crassus de Portefaix, and Mrs. Carmen Crassus Rodriguez. All the partners are the heirs of the late Victor Crassus, who formerly owned the railway. Luis Rafael Rodriguez is the husband of one of the partners.

Purchases are generally made directly from the manufacturers by the president, Carlos Crassus, Caracas, Venezuela. The New York agents of the company are Bliss, Dallett & Co.

Altitude.—The road runs from 0.68 meter above sea level at Carenero to 29.7 meters at La Espanola del Guapo, which is the highest point on the road.

Gauge.—The gauge of the road is 3 feet.

Curves.—The radius of the minimum curve is 100 meters.

Grades.—The maximum grade is 3 per cent.

Ties.—Ties of native hardwood called "vera," obtained locally and spaced on 60-centimeter centers, are used.

Rails.—Rails weighing 40 pounds to the yard, in sections of 7.3 meters, are in use. Other lengths have been recently imported.

Water.—Water is obtained from the Tuy, Curiepe, and San Jose Rivers. The company has a large reservoir at Carenero, and a system of pipe lines and pumps convey the water from the river to this reservoir. There are six water stations along the road, one at each railway station. The tanks are made of steel and are either round or square.

Signaling.—Flags and lights are used for signaling.

Bridges.—There are 72 bridges, having a total length of 877 meters. Two of the bridges are of steel construction and each one is 50 meters in length.

Tunnels.—There are no tunnels on the road.

For the calendar year 1925 there were nine locomotives having an approximate weight of 140 tons. Seven of these locomotives are of Belgian manufacture, one of American, and one of British. The cars included:

Passenger cars	5
Flat cars	6
Steel flat cars	5
Box cars	22
Stock cars	9
Hand cars	12
Rail motor car	1
Total	60

There is one repair shop, at Carenero, which is equipped with modern machinery, with a capacity for casting copper and steel pieces weighing up to one-fourth of a ton. The average number of employees working in the shops is 25.

MACUTO & COAST LINE RAILWAY

(FERROCARRIL DE MAIQUETIA A MACUTO)

The history of this road dates from a decree granted by the President of Venezuela in 1878. The road was constructed and operated at first by the Government; later it was transferred to a Venezuelan company, and was then purchased by a French company. In 1912 the road was taken over by the La Guaira Harbor Corporation, a British company, under whose control it is now operated. Originally the road was operated by steam locomotives, the company having one small engine, but when the present company took it over it electrified the road and extended the tracks to Plaza de Lourdes, in Maiquetia. The road was primarily designed for the purpose of serving the inhabitants of the narrow coastal strip extending between Macuto and Maiquetia, a distance of 8 kilometers. The road has no locomotives, depending upon the La Guaira Harbor Corporation for the use of its engines for the few times that there is an interruption in the electric service or during "feast days," when locomotives are used to handle the extra passengers. Locomotives are used to carry extra freight.

The following is a statement of the road's income, expenses, and traffic for the years indicated:

Years	Number of passengers	Passenger revenue	Freight carried	Total revenue	Total expenses
		Bolivars	*Kilos*	*Bolivars*	*Bolivars*
1917	255, 160	162, 425	5, 260, 824	179, 692	101, 395
1918	302, 134	173, 183	1, 945, 000	202, 175	110, 813
1919	430, 668	239, 109	2, 562, 675	270, 628	146, 302
1923	1, 092, 483	254, 623	2, 363, 000	286, 211	213, 338
1924	1, 501, 266	260, 036	4, 740, 000	303, 070	218, 877
1925	1, 728, 736	311, 590	6, 429, 074	358, 545	250, 756

The operating officials of the road as of November 1, 1925, are as follows: General manager, J. H. Wall, La Guaira, Venezuela; secretary, J. P. Gonzalez, La Guaira, Venezuela.

Purchases are made through the London office of the La Guaira Harbor Corporation, whose secretary is E. J. Summers, 6 Broad Street Place, London, E. C. 2.

Altitude.—The road runs from sea level at La Guaira to 36 meters above sea level at Maiquetia.

Gauge.—The gauge of the road is 3 feet.

Grade.—The maximum grade of the road is one of 6.50 per cent, beginning at Plaza de Tamarindo, Maiquetia, and extending a distance of 60 meters.

Curves.—The maximum curve radius of the road is 90 feet.

Ballast.—Gravel, rock, and cement are used for ballast.

Ties.—Ties 7 feet long, 9 inches wide, and 5 inches thick, of various kinds of native hardwoods, spaced on 3-feet centers, are used.

Rails.—Rails weighing 50 pounds to the yard, in sections of 30 feet and 40 feet, are used. A cross section of the rail is as follows: Height, 4½ inches; width, 1½ inches; flange, 3 inches.

Water.—There are two water tanks on the road, one located at La Guaira and the other at Maiquetia, 5 kilometers distant. The tanks are of galvanized iron construction, and water is obtained from neighboring rivers and streams.

Fuel.—Electricity, obtained from the Mamo Electric Co., provides the motive power. No changes are contemplated at the present time.

Signaling equipment.—There is no signaling equipment in use.

Maintenance.—The road is a single-track line kept in good repair.

Bridges.—There are three small bridges, 6, 10, and 15 meters in length, respectively, constructed of wood and stone.

The rolling stock, as of November 1, 1925, consisted of four electric street cars and four trailers.

Repairs for the rolling stock are made at the repair shop of the La Guaira Harbor Corporation.

COLON DEVELOPMENT CO.'S RAILWAY

This road is privately owned and operated by the Colon Development Co., a British corporation, and runs from Tarra, district of Colon, State of Zulia, a distance of 17 kilometers, to the Rio de Oro petroleum district, near the Colombian border. The company has its home office at St. Helen's Court, Great St. Helens, London, E. C. 5, England. It is controlled by the Dutch Shell group of Anglo-Dutch petroleum interests.

The operating officials of the road for the calendar year ended December 31, 1925, were as follows:

General manager, W. T. S. Doyle, Caracas, Venezuela.
Assistant general manager, Roy W. Merritt, Caracas, Venezuela.
Superintendent of Tarra-Rio de Oro oil fields of the Colon Development Co., Thomas Ivinson.

Purchases are mainly made in the United States through the Carib Syndicate, New York City.

The motive power and rolling stock for the calendar year 1924 consisted of 38 flat cars (Easton) and 1 gasoline passenger car (Buda).

RAILROAD OF ASPHALT MINES OF GUANIPA

This road, no longer in operation, was formerly owned by the English company known as the "Val de Travers Asphalt Paving Co. (Ltd.)." The road extended a distance of 3 kilometers and was located in the State of Maturin, Venezuela.

CARIBBEAN PETROLEUM CO.'S RAILWAY

This road is owned and operated by the Caribbean Petroleum Co., which is an American corporation entirely owned by the Dutch Shell group of Anglo-Dutch petroleum interests. The line runs from a small refinery at San Lorenzo to the producing oil fields at Mene Grande, a distance of 15.5 kilometers, entirely located in the district of Sucre, State of Zulia. At this point there are approximately 24.5 kilometers of track extending into the oil fields. The total length of the road is 40 kilometers. The line is of 24-inch gauge, with a maximum grade of 2 per cent and a minimum curve radius of 30 feet. Some of the track is Decauville, while other sections are constructed with rails weighing 30 pounds to the yard, laid on wood ties secured locally.

For the calendar year 1925 the road had two 10-ton oil-fuel steam locomotives (used for heavy freight on the main line only), nine 3-ton gasoline locomotives (used for light freight haulage at the San Lorenzo terminal and in the oil fields), three 4-ton gasoline locomotives (used for freight haulage in the Mene Grande field), 160 flat cars for freight, 54 steel dump cars, 4 combined freight and passenger cars, 6 hand cars (Buda), and 6 gasoline passenger cars (Buda). The road was principally designed to transport freight, but workmen, their families, and visitors are also carried when necessary. The passenger traffic, however, is incidental. At the present time two steam trains are run daily in each direction.

W. T. S. Doyle, Caracas, Venezuela, is the general manager, and Roy W. Merritt is the assistant manager.

Purchases for the road are made through the office of the company in the United States, which is "care of the Asiatic Petroleum Co., New York City."

GUANOCO RAILROAD OF NEW YORK & BERMUDEZ CO.

This road is owned and operated by the New York & Bermudez Co., a subsidiary of the Barber Asphalt Co. of Philadelphia, Pa. The line is about 8 miles in length, of 3-foot gauge, running from the town of Guanoco, in the district of Benitez, State of Sucre, inland through mangrove swamps. The road has 8 American-built locomotives and 100 flat cars. Each train hauls about 100 tons of asphalt in square boxes. Approximately 70,000 tons of asphalt are handled yearly.

The general superintendent at Guanoco is Roland Ring, an American; the other officials are Venezuelans.

All purchases are made through the Barber Asphalt Co., Philadelphia, Pa.

STANDARD OIL CO. OF VENEZUELA'S RAILWAY LINES

The Standard Oil Co. of Venezuela, a subsidiary of the Standard Oil Co. of New Jersey, owns and operates three short industrial railways in Venezuela.

One runs from Punta Leiva (about 8 kilometers distant from Maracaibo), extending 400 meters into the oil fields of that district. It is of 36-inch gauge and runs on a practically level plain, using rails weighing 60 pounds to the yard, laid on ties secured locally. This line has one small gasoline locomotive and six 20-ton flat cars.

The second line runs from the confluence of the Santa Ana River and the Lara River, about 120 kilometers southwest of Maracaibo, in the district of Perija, and extends inland from this point a distance of 17½ kilometers. This line has a gauge of 24 inches, a maximum grade of 6½ per cent, and uses rails weighing 30 pounds to the yard, laid on wooden ties secured locally. The rolling stock consists of three 3-ton gasoline locomotives, twelve 10-ton flat cars, and one 15-ton locomotive crane. This line is not in operation every day but is used only when necessity demands.

The third line extends from a point near the end of the Guanoco line of the New York & Bermudez Co., a distance of 7½ kilometers to some oil-drilling locations. It will be remembered that the New York & Bermudez Co. operates a railway extending from the port of Guanoco inland to an asphalt lake in the interior. This line is of narrow gauge and of temporary structure. It may be taken up and moved, if necessary. It has 3 small (Milwaukee) gasoline locomotives weighing 3 tons each, 12 flat cars, and 2 hand cars in operation.

The general manager of the company in Venezuela is Arthur A. Eberly, of Caracas, Venezuela.

All purchases for these lines are made through the Standard Oil Co. of New Jersey in New York City.

LARGO PETROLEUM CORPORATION'S RAILWAY

This company is constructing a road running from its warehouse situated at Salina, about 22 kilometers south of Maracaibo, inland to Ambrosio, a distance of 4½ kilometers. The company has been engaged for some time in drilling operations at the last-mentioned place, and now finds it necessary to construct a railway which was supposed to have been completed by April 1, 1926. The road will be of 24-inch gauge, and rails weighing 30 pounds to the yard, laid on wooden ties secured locally, are used. At the present time the road has in use three 4-ton (Milwaukee) gasoline locomotives and forty 10-ton freight cars.

VENEZUELAN OIL CONCESSIONS RAILWAY

This railway is owned and operated by the Venezuelan Oil Concessions (Ltd.), a British corporation whose main office is at St. Helens Court, Great St. Helens, London, E. C. 5, England. The road, commonly called "the V. O. C.'s Railroad," is located at La Rosa, in the district of Bolivar, State of Zulia, and extends a distance of 4½ kilometers inland to the company's oil fields. At the present time the company is controlled and operated by the Caribbean Petroleum Co., a Dutch Shell subsidiary whose address in the United States is "Care of the Asiatic Petroleum Co., New York City." The road is of 24-inch gauge and for the calendar year 1924 had 17 flat cars (Easton) and some gasoline (Milwaukee) engines. It is known that the motive power and rolling stock have been increased lately, but the exact amount of this equipment is not known.

The manager of the company is W. T. S. Doyle, Caracas, Venezuela, an American, and the assistant manager now in charge is Roy W. Merritt, Caracas, Venezuela.

The purchasing agent of the company is Henry Swartz, Maracaibo, Venezuela.

BRITISH-CONTROLLED OILFIELDS RAILROAD

This company has under construction a railway connecting its lake loading station at Alta Gracia (about 12 kilometers northeast of Maracaibo) with its operating fields at El Mene, in the Buchivacoa district of the State of Falcon, a distance of about 55 kilometers. The company has had a pipe line in operation between these two points for some time, but now finds that it is necessary to construct this railway. The English firm of Norton & Griffiths has contracted to supervise the construction of the line and to make all purchases. It was learned, however, that in March the Standard Oil Co. had taken over the operation of the British Oilfields Co. and incidentally its railway. It is reported that the Standard Oil Co. has full power to operate the company but has made no investment in it. As of February 27, 1926, 40 kilometers of grading were completed and 26 kilometers of track laid. It was expected that the road would be completed by the end of July, 1926. The road is of 30-inch gauge, with a maximum grade of 2 per cent. Rails weighing 30 pounds to the yard, laid on wooden ties obtained locally, are used. The road has two gasoline locomotives, twelve 18-foot flat cars of 4 tons capacity, ten side-tip cars (5 by 5 by 4 feet), and twelve bogies of 4 tons capacity. The company intends to purchase three steam oil-burning locomotives in the near future.

According to the original agreement, the English firm of Norton, Griffiths & Co. was to make all purchases. Whether the fact that the Standard Oil Co. of New Jersey has taken over this line will change the purchasing method is not known.

CARIBBEAN COAL CO. RAILROAD

The history of this road dates from 1900, when a concession for its construction was granted to the United States & Venezuela Co. It is reported that this company was controlled by the Ubalde Asphalt Paving Co. The company planned to take asphalt from Inciarte, a section of the district of Mara just to the north of the district of Maracaibo, and to transport this asphalt from that place to Carasquero, a town on the Limon River, from which place it could be shipped in barges or small ships to Punta del Diablo, on the island of Toas in Lake Maracaibo, where it was picked up in large freight ships for shipment to the United States. In 1901 this company commenced operation, and it was during this period that the railroad was constructed, extending from Inciarte to the town of Carasquero, a distance of 42.5 kilometers.

The company established a very good business, but in 1905 a law was passed compelling its shipments to clear from Maracaibo. This meant considerable delay and inconvenience, and eventually the company was forced out of existence. The concession was then taken over by a Venezuelan company, which ceased operation within a year. The railroad was then abandoned until 1915, when the Caribbean Coal Co. was formed. At this time approximately $35,000 in repairs was spent on the roadbed and operation was resumed. Active operations of the company, however, did not last very long and the railroad was abandoned some time in 1918 or 1919.

It is understood that this company still holds the concession but is not actively operating under it. During the last seven years no care has been taken of the roadbed or rolling stock except to see that the latter was, to a certain extent, protected from the weather. At the present time the rolling stock consists of two engines, reported to have been in fair condition in 1921, and a few freight cars stored at Carasquero, which are said to be in poor condition. According to reports, the roadbed seems to be in fair condition and could undoubtedly be put in working order at little expense.

"CENTRAL VENEZUELA" SUGAR MILL RAILROAD

This road is owned by the Compañía Anónima Central Venezuela, Maracaibo, Venezuela, a Venezuelan corporation which owns and operates a sugar mill and this private industrial railway in connection with it. This company commenced operation in 1916, when the railroad was constructed. At the present time the line runs from a port on Lake Maracaibo called Bobures to the sugar mill, a distance of 20 kilometers, and in addition has some mileage extending into the cane fields.

The president is C. G. Pinedo and the chief engineer is Doctor Martinez, of Maracaibo, Venezuela.

Purchases for the road are made through Paris & Co., of New York City.

As of November 1, 1925, the line had four American engines of 0-4-0 type and two geared donkey engines of 0-4-0. In addition there were 8 freight cars of 15 tons capacity each, 340 cane cars, and some tank cars. The couplers used are of link-and-pin type, 16 inches above top of rail for the cane cars, 22 inches for tank cars, and 28 inches for freight cars.

MAGNESITE MINING & MANUFACTURING CO. RAILROAD

This road was first constructed for the American Carbon Co. by Charles Freeman, an American citizen, living at Caracas, Venezuela. The road was taken over in 1912 by the Magnesite Mining & Manufacturing Co., which continued to operate it until the late war. Litigation in which the company was involved over the validity of its lease started in 1921, and ended in the Magnesite Co.'s favor in 1925. At the present time the line runs from the port of Manzanillo to the magnesite mines known as "La Loma de Guerra," on the island of Margarita, and is 7 kilometers in length. Although it has not been operated for several years, it is understood that operation is shortly to be resumed.

At the present time the road is owned by the Magnesite Mining & Manufacturing Co., 81 Elizabeth Street, New York City (or care of E. Rueff, 30 Mount Morris Park West, New York City). The manager of the mines is Harry W. Schumacher, Porlamar, Isla de Margarita, Venezuela. Purchases for the road will be made by the company through its New York office.

The road is of 2-foot gauge, and rails weighing 20 pounds to the yard were laid in 1915. As of November 1, 1925, the road had two engines—one of 10 tons and one of 7 tons capacity. In addition there are 32 cars, mostly of the dump variety. The locomotives and cars are in good condition, but it is expected that new equipment will be purchased, as the company expects to resume active operations soon.

UNITED ELECTRIC TRAMWAYS CO. OF CARACAS

This company was formed in 1906 for the purpose of acquiring three horse-power tramways in Caracas and electrifying them. The work of conversion was executed by contractors who operated the line for their own benefit and paid all administrative expenses until the work was finished in 1908. At the present time the company operates approximately 18½ miles of electric tramways.

The authorized capital is £200,000 in £1 shares, of which £170,000 has been allotted and called up, including 169,993 shares issued, fully paid, in payment for the concession, and the entire capital of 1,272 shares of 500 bolivars each, or 636,000 bolivars in all, of the Compañía de Tranvías Eléctricos de Caracas, the local company. In December, 1906, a trust was registered for £200,000 of 5 per cent first-mortgage debenture stock, redeemable by a cumulative sinking fund of one-half of 1 per cent per annum, increased to 1 per cent in 1920, applicable to purchases in the market, at or under 105 per cent, or by drawings at that figure, the whole to be paid off by January, 1950. Of this debenture stock £170,000 was allotted to the contractors in payment for work done, and by the operation of the sinking fund the amount outstanding has been reduced to £122,800. The accounts are made up to the end of June. In 1911, when the length was only 16¼ miles, the company carried 3,752,723 passengers, ran 899,870 car-miles, with 41 cars in working, and with gross receipts equal to 1.21 bolivars per car-mile and expenses to 0.70 bolivar showed a gross revenue of 1,088,981 bolivars, an expense ratio of 57.58 per cent, and net receipts of 461,943 bolivars, equal to £17,726. The first dividend was not paid, however, until 1912–13 (although the net revenue was equal to over 5 per cent on the share capital in 1911–12), when 5 per cent was distributed by slightly reducing the "carry forward," and since this company started paying dividends a total of 108½ per cent has been declared in dividends, which is equal to an average of 8⅓ per cent per annum, and has been earned with an average surplus which has enabled the board to increase the "carry forward" from £704 to £22,796, as well as reduce the debenture debt outstanding by something like £47,000. For each of the four years to the end of June, 1925, the dividend has been 10 per cent per annum, although the available profits have averaged enough to have paid 12½ per cent per annum during that period.

In the table below is shown the statistical progress of this company during each of the last 14 years. In that period the number of cars has increased to 55, while in 1924 the company, being threatened with competition from omnibuses, decided, notwithstanding the many severe gradients in Caracas, to be the first in the field with this method of transport by putting three omnibuses on the streets. After a year's experience, however, it was decided that, the buses having shown a considerable loss on working, it was preferable to speed up and otherwise improve the tram service rather than increase the fleet of buses, especially as 20 competing buses were in operation. The reports and accounts are made up to June and presented in the following October; they include a balance sheet of the local company, the figures being given in Venezuelan currency, and showed at June last a general reserve fund, "as per Venezuelan law," of 421,893 bolivars and reserve for renewals of 402,856 bolivars, a total of 824,750 bolivars, as well as an exchange suspense account of 604,049 bolivars, but the whole of this 1,428,799 bolivars has been spent on the property, for apart from capital expenditure and stores the only assets are sundry debtors, unexpired insurance, and cash totaling 22,437 bolivars, while sundry creditors represent as much as 574,168 bolivars. The original capital expenditure of the local company was 4,855,084 bolivars, since increased to 6,985,183 bolivars, all paid for out of earnings. The British company has no reserve fund of any kind, but the balance sheet is a fair one, for it shows cash at £21,488, sundry debtors £21,903, and investments £1,478, or a total of £44,870, against which there are liabilities for interest accrued on debenture stock £3,070, sundry creditors £216, and £17,000 for dividend paid, or a total of £20,286—thus showing a surplus of £24,584 assets over liabilities, apart from the properties, which at £338,245 have never varied. The following table gives the company's record for each of the last 14 years:

Fiscal year	Number of passengers	Miles run	Earnings			Available	Dividend	Surplus	Forward
			Gross, in bolivars	Net					
				In bolivars	In sterling				
							Per cent		
1912	4,403,099	974,522	1,247,405	558,795	£21,525	£814	--------	£814	£814
1913	4,838,378	967,566	1,397,259	679,483	26,439	8,390	5	[1] 110	704
1914	5,391,809	985,055	1,550,587	801,967	31,761	19,202	11	502	1,206
1915	4,992,210	1,014,547	1,426,678	693,664	27,471	14,542	8½	92	1,299
1916	4,976,395	1,038,854	1,426,975	669,168	26,501	13,028	7	1,128	2,428
1917	4,984,206	1,035,866	1,425,756	672,231	26,623	11,370	7	[1] 530	1,899
1918	5,499,697	1,037,203	1,557,644	791,419	31,343	17,294	7	5,394	7,294
1919	5,619,748	1,029,682	1,586,036	748,999	29,663	14,552	7	2,652	5,221
1920	7,321,957	1,095,330	2,050,598	993,845	39,360	16,246	8	2,646	7,867
1921	8,013,941	1,118,842	2,239,324	958,131	37,945	20,584	8	6,984	9,340
1922	8,214,523	1,119,189	2,294,440	1,050,011	41,584	18,128	10	1,128	8,502
1923	8,068,589	1,128,117	2,286,331	1,002,915	39,719	22,791	10	5,791	14,294
1924	8,344,779	1,181,326	2,315,839	1,005,296	39,813	22,302	10	5,302	17,741
1925	8,626,348	1,188,658	2,458,899	1,044,616	41,370	23,011	10	6,011	22,796

[1] Deficit.

MARACAIBO STREET RAILWAYS

The city of Maracaibo and its environs are served by three street-railway companies known as La Tranvía Eléctrica de Bella Vista, La Tranvía Eléctrica de Maracaibo, and La Empresa de Tracción y Fuerza Eléctrica.

LA TRANVÍA ÉLÉCTRICA DE BELLA VISTA

This company, originally operated as a steam line, was changed to an electric one in 1914 and since that date has been owned and operated by the Rincon family. The line runs from the center of the business district to the suburban residential section of the city, Bella Vista, a distance of 9 kilometers. The company has no plans to extend its lines in the near future.

It is understood that the capital of the company is 1,850,000 bolivars, owned entirely by members of the Rincon family of Maracaibo. It is estimated that the passenger fares amount to 30,000 bolivars a month.

The road is operated by L. E. Rincon, H. S. Rincon, and A. L. Colmenares, all of Maracaibo.

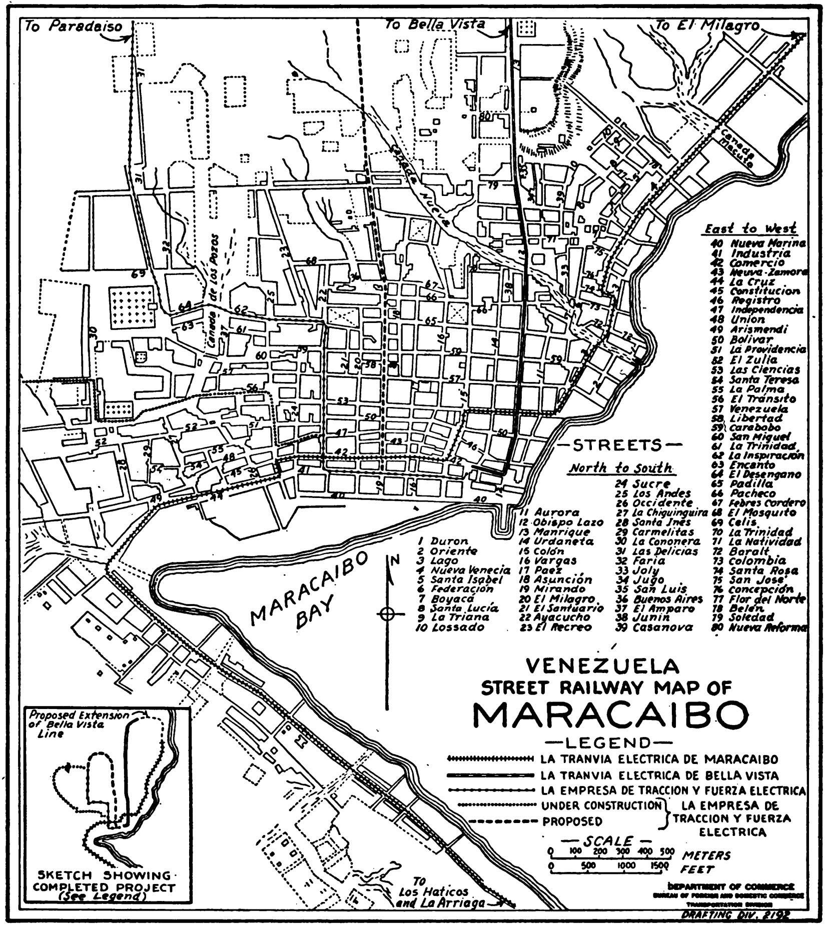

FIG. 28

Purchases for the road are made directly by the above officials.

Altitude.—The road runs from 2 feet above sea level to 120 feet, the highest point on the line.

Gauge.—The road is of narrow gauge.

Grade.—Maximum grade is 3 per cent, extending a distance of 4 kilometers.

Curves.—Maximum curve is 96 degrees.

Ballasts.—The line is ballasted with rock, gravel, and clay.

Ties.—Wood ties, obtained locally, 6 feet in length and spaced on 12-inch centers, are used.

Rails.—Rails of the Vignole type, weighing 35 pounds to the yard and 30 feet in length, are used.

Fuel.—Electricity is used for propulsion. This is supplied by the Venezuela Power Co.

On February 1, 1926, the line owned 12 Brill open-type 32-passenger cars, equipped with General Electric motors.

There is one small repair shop, which has sufficient machinery to keep the rolling stock in repair.

LA TRANVÍA ELÉCTRICA DE MARACAIBO

The history of this company dates from 1891, during which year it operated 9 kilometers of line running over the same course as the present line, with cars drawn by mules. Some years later the original cars were replaced by storage-battery cars, and in 1917 the trolley system was adopted.

One section of the line runs from El Milagro, a residential section, to the north of the business district of the city, to the center of the city, terminating in the Plaza Baralt. The other section starts at the Plaza Baral and extends along the shores of the lake through Los Haticos, formerly a residential section but now to a certain extent a business district, to the suburban town of La Arriaga. The company has 10½ kilometers of line in operation. At the present time plans are being considered to connect the line operated by La Tranvía de Bella Vista to the El Milagro section of the Tranvía Eléctrica de Maracaibo, which are now about 2 kilometers apart.

The road is owned by a stock company, the shares of which are controlled by Joshua Da Costa Gomez and L. E. Rincon. It is capitalized at 3,000,000 bolivars, while its reserve funds consist of first-class mortgages and bonds valued at 500,000 bolivars.

Prior to the war the company transported, on an average, 60,000 passengers a month, but this has since been increased until in 1926 it carries 250,000 passengers a month. Its monthly revenue from fares averages 60,000 bolivars. Freight is carried in trailers behind the passenger cars.

The president of the company is L. E. Rincon.

Purchases are made through the mercantile firm of J. & H. D. C. Gomez, Maracaibo, Venezuela.

Altitude.—The road runs from 2 feet above sea level to 30 feet, which is the highest elevation.

Gauge.—The road is of narrow gauge.

Grades.—There are no grades on the road.

Curves.—The maximum curve is 96 degrees.

Ballast.—the line is ballasted with rock, gravel, and clay.

Ties.—Ties obtained locally, 6 feet in length, spaced on 12-inch centers, are used.

Fuel.—Electricity supplied by the Venezuela Power Co. constitutes the motive power.

Signaling.—There is no signaling equipment in use on the road.

On February 1, 1926, the line had 14 Brill open-type 32-passenger cars, equipped with General Electric motors.

There is one repair shop which is equipped with sufficient machinery to make all ordinary repairs.

LA EMPRESA DE TRACCIÓN Y FUERZA ELÉCTRICA

This company was organized by Joshua Da Costa Gomez in 1925 and operation was commenced in November of the same year. The line starts just below the Plaza Baralt and extends through "Paradisio," a new residential section, to the north and west of the city. The line at the present time is 4 kilometers in length, and 4 additional kilometers are being constructed. Plans are being completed for a further extension of 4 kilometers.

The company is capitalized at 1,000,000 bolivars, and common stock to that amount has been issued. It owns first-mortgage bonds valued at 8,000 bolivars. Joshua Da Costa Gomez owns all the stocks and bonds of the company. It is estimated that the income from operations is approximately 27,000 bolivars per month and that the company carries about 100,000 passengers per month.

The president is Joshua Da Costa Gomez.

All purchases for the road are made through the mercantile firm of J. & H. D. C. Gomez, Maracaibo, Venezuela.

Altitude.—The road runs from 2 feet above sea level to 120 feet, which is the highest point.

Gauge.—The road is of narrow gauge.

Grades.—The maximum grade on the road is 8 per cent for a distance of 1,000 feet.

Curves.—The maximum curve of the road is 96 degrees.

Ballast.—The line is ballasted by rock, gravel, and clay.

Ties.—Ties obtained locally, 6 feet in length and spaced on 1-foot centers, are used.

Rails.—Rails of the Vignole type, 30 feet in length and weighing 35 pounds to the yard, are used.

Fuel.—Electricity supplied by the Venezuela Power Co. constitutes the motive power.

On February 1, 1926, the company owned seven Brill open-type 32-passenger cars, equipped with General Electric motors.

The road has one repair shop which can make any ordinary repairs.

LA GUAIRA-TO-CARACAS CABLEWAY (PROPOSED)

The concession for the construction of this cableway was granted to Angel Alamo Ibana, Apartado de Coneos, 56, Caracas, on September 14, 1922, by the Venezuelan Government. Two routes are being considered at the present time for the right of way. One is about 8.3 miles in length and the other about 6.2 miles. It is estimated that the cable will be able to transport about 200 tons of merchandise each way in a period of 10 hours.

A copy of the contract entered into between the Government and Angel Alamo Ibana is as follows:

General Juan C. Gomez, Governor of the Federal District, in virtue of attribution No. 28, article 7, of the organic law of the Federal District, on one side, and on the other Angel Alamo Ibarra, who henceforth shall be called the contractor, of age and a resident of this city, have agreed to enter into the following contract:

ARTICLE 1. The government of the Federal District concedes the contractor the right to construct a traction cable line for the transportation of merchandise, produce, materials, and goods of every kind, which, beginning at a point on the coast of La Guaira that shall be fixed between Maiquetia and Macuto, shall extend to Caracas. The contractor is at liberty to select the sites for the cable's terminal stations, and to establish the intermediate stations and branches that he may deem advantageous for its exploitation without passing the limits of the Federal District.

Art. 2. The contractor shall charge for freight a maximum of 30 bolivars per metric ton from La Guaira to Caracas and 20 bolivars from Caracas to La Guaira. The contractor binds himself to reduce this maximum tariff, as petitioned by the government of the Federal District, from the date the tonnage transported exceeds 100,000 tons per year, at a 5 per cent deduction for every 10,000 tons excess, till a 30 per cent maximum reduction from the highest tariff is reached. The contractor shall present a monthly report on the freight movement to the government of the Federal District.

Supplementary paragraph: The transportation of mail sent out from the post offices shall be free of charge, and the effects of the national and municipal governments shall enjoy a reduction of 50 per cent of the mentioned tariff. In the event of war the military units of the Government shall be transported with a 75 per cent reduction.

Art. 3. The contractor binds himself to begin the work of installation of the cable within two years from the date the municipal council approves this contract, and to complete it before the end of the two years following the beginning of said work, save inconveniences of "force majeure" duly proved by the contractor. The contractor shall present to the government of the district, for its approval, the maps and projects of the cable, with all its appurtenances, at least three months before starting the work of installation.

Art. 4. The contractor or his heirs shall make use of lands of municipal ownership, strictly necessary for the erection of poles, construction of towers, offices, workshops, plants for motive power or transformers, and other installations necessary for its construction. When compelled to make these installations on private lands, said lands shall be expropriated in accordance with the law on the subject, the contractor paying their value. To this end the approval of the contract by the municipal council shall be construed as an implicit declaration of public utility in regard to all the works of the enterprise as determined on the maps and projects referred to in the preceding article.

Art. 5. The contractor shall be at liberty to use, as motive power, electricity, steam, gas, or any other form of power that, by virtue of later scientific or industrial discoveries, might be more convenient, and may install in the track followed by his cable, and parallel to it, the lines for transmission of power necessary for telegraphs and telephones for the exclusive use of the enterprise.

Supplementary paragraph: The contractor shall permit national or Federal District authorities the use free of charge of its lines, when they, occasionally and only in matters of public service, need to use them.

Art. 6. As the sole municipal tax, the contractor shall pay to the municipal revenue the sum of 5,000 bolivars yearly, counting from the date the enterprise is opened to the public service.

Art. 7. The government of the district shall endeavor to obtain from the National Government the exemption of the contractor, or his heirs, from registration fees, except those of transcribing and stamps, as well as the national taxes and contributions that might be levied upon this class of transportation. The employees necessary for the regular work of the enterprise shall be exempt from active service in the army, save in case of international war.

The government of the district shall likewise solicit exemption from all import duties on towers, poles, cables, wagons, machinery, apparatus, wires, insulators, buildings, coal, materials, tools, utensils, fixtures, etc., necessary for the installation, conservation, and exploitation of the enterprise and destined exclusively for its use. In each case the contractor shall comply with the formalities of law in his importations. This obligation on the part of the government of the district, which shall be in force for the entire period of the contract, shall entail no responsibility upon it, in case the National Executive does not accede to the solicitation.

Art. 8. The period of the present contract shall be 60 years counting from the date of approval by the municipal council, at the expiration of which period all the works of said cable shall pass to municipal ownership. During the first 30 years exclusive privilege shall be conceded to the contractor, and, in consequence, the municipality is under the obligation not to grant, during said 30 years, concessions for other cable transportation enterprises between the cities mentioned in article 1 of this contract.

Art. 9. The contractor or his heirs shall be at liberty to transfer this contract, with prior consent of the government of the district, to individuals or commercial associations, but in no case can said contract be ceded, in whole or in part, to a foreign government.

Art. 10. Questions and controversies of any nature that may arise out of this contract, which can not be settled amicably by the contracting parties, shall be decided by the competent tribunals of Venezuela, in conformity with its laws, this being by no means a motive for foreign intervention.

Caracas, September 7, 1922.

Juan C. Gomez.

VENEZUELAN RAILROAD LAW AND REGULATIONS IN FORCE

There is given, in succeeding pages, the Venezuelan law in force with respect to railroad concessions (signed June 4, 1918), together with the regulations for railroad operations; these have been translated from the Spanish of the "Memoria de Obras Públicas" of Venezuela, volume 1, 1919:

The Congress of the United States of Venezuela decrees the following law covering railroad concessions:

I. General Provisions

Article 1. Concessions for the construction and operation of railroads in Venezuela shall be made by means of contracts to be executed by the Federal Executive, in conformity with this law.

Art. 2. Concessions for the construction of railroads shall be made to companies, either national or foreign, legally organized, as well as to private parties.

Art. 3. The Government of the Republic will not guarantee any interest on the capital that may be invested in railroad construction in this country.

Art. 4. The national or foreign enterprises that may construct or operate a railroad shall conform to the provisions of the code of commerce, and other laws covering this subject, in regard to its organization and administration.

Art. 5. These concessions shall not be transferred, in whole or in part, to a foreign government; and in order that transfers to private parties or companies may be valid, it is essential to secure the consent of the Federal Executive.

Art. 6. At least one-half of the laborers employed in the construction and operation of railroads must be of Venezuelan nationality. The same provision is applicable with respect to the other employees of the particular enterprise who reside in this country.

Art. 7. In every railroad concession the following clause in article 121 of the national constitution must be stated: "All doubts and controversies of any nature that may arise from this contract, and which can not be settled in a friendly manner by the contracting parties, shall be decided by the competent tribunals of Venezuela, in conformity with its laws, but they must not for any motive or cause be claims originating in foreign countries."

Art. 8. In conformity with article 58, line 10, of the national constitution, no railroad contracts shall be executed without first securing the approval of the National Congress.

Art. 9. In every contract of concession there shall be stipulated the date on which the construction work of the railroad will begin, and this period of time shall not, in any case, exceed two years, beginning with the date of the approval of the contract by the congress. The time limit for completing the line and opening it to service shall also be fixed. Only in the case of accident or force majeure shall the contractor have the right of an extension for the presentation of the plans referred to in article 12, or for the commencement or termination of the construction. The extension shall be for a period of time equivalent to what was lost through the accident or force majeure. If the contractor fails to begin the construction of the railroad within the time limit stipulated therefor, the deposit provided for in article 11 shall become the property of the nation.

II. Formalities to be Carried out by Railroad Concessionaires

Art. 10. The party requesting a railroad concession shall make a deposit with the cashier of the national treasury of 20 bolivars [a bolivar is equivalent to 19.3 cents] for each kilometer of length of the proposed railroad. This deposit shall be made in currency or its equivalent in the public-debt bonds of Venezuela of the type quoted on the market on the date the said deposit is delivered. For the object of estimating the length of the line, and for the purposes of this obligation, the petitioner shall submit with his request a sketch or plan showing a zone of not less than 40 kilometers on each side of the line.

PARAGRAPH 1. The amount of the deposit referred to in this article shall become the property of the nation from the date on which it is made.

ART. 11. The contractor in every railroad concession is obligated to make an additional deposit in cash up to a sum proportional to the extent of the line and its gauge, based on what is indicated in article 13 and paragraph 1 thereof as follows:

A track of a gauge of 0.61 meter, 600 bolivars per kilometer.
A track of a gauge of 0.915 meter, 900 bolivars per kilometer.
A track of a gauge of 1.07 meters, 1,000 bolivars per kilometer.
A track of a gauge of 1.435 meters, 1,400 bolivars per kilometer.

The federal executive may reduce this deposit up to about 15 per cent.

This deposit shall be made in currency or its equivalent in the public-debt bonds of Venezuela of the type quoted on the market on the date of the delivery of the said deposit in a bank or commercial house satisfactory to the federal executive within a period of one year, beginning with the date on which the contract is approved by the Congress. This deposit is intended for the purpose of guaranteeing the fulfillment of the contract on the part of the contractor. If the latter fails to make the said deposit within the period specified therefor, this contract shall be held as canceled in its entirety.

PAR. 1. In the event the deposit provided for in this article consists of public-debt bonds of Venezuela, the matured coupons shall be in favor of the depositary, and the expenses incurred, due to the deposit, shall be chargeable to the latter.

PAR. 2. Upon completion of the railroad the said deposit shall be returned to the contractor, and if the latter does not carry out the building on the conditions and within the time specified, the deposit shall become the property of the nation.

ART. 12. The contractor shall submit, for the examination of the Department of Public Works, the general plans of the line, and the sketches, longitudinal profiles, and transverse sections sufficient to give a clear idea of the works that are to be constructed, and the conditions of each section at least three months before the beginning of the building operations which can not be carried out until the approval of such plans, etc. In the same manner the contractor shall submit to the Department of Public Works, for the purpose aforesaid, the plans of any modification or variant that may be introduced in the construction work during the course of its operation.

III. CLASSIFICATION OF THE RAILROADS CONSTRUCTED IN VENEZUELA AND THEIR TECHNICAL CONDITIONS

ART. 13. The railroads in Venezuela shall be constructed with a width of 1.07 meters between the rails.

PAR. 1. The federal executive may also contract for railroads having a width between rails of 0.61, 0.915, and 1.435 meters.

ART. 14. The technical conditions of railroads shall be as follows: In the case of tracks having a width of 0.61 meter between rails, the minimum radius of the curves shall be 30 meters and the maximum grade 3½ per cent; for tracks with a width of 0.915 meter between the rails 45 meters and 3 per cent; for tracks with a width between rails of 1.07 meters, 60 meters, and 3 per cent; and for tracks of 1.435 meters the limits shall be 100 meters and 3 per cent, respectively. The maximum limits fixed for the grades refer to cases in which no special adhesion system is used. The minimum distances between the curves and the reverse curves shall be 10 meters for the first-named tracks, 15 for the second, 20 for the third, and 30 for the fourth.

Between a grade and a reverse grade there shall always be a horizontal space 25 meters long, at the least.

The changing of grades between the curves and for distances of 10 meters in front or behind them is prohibited.

Wherever it may be necessary to erect structures having a span with an opening of more than 5 meters the line of level should be made horizontal in this space, including 10 meters on each side of the structure. In the case of station buildings this line should be straight and always horizontal.

All bridges and other structures shall have sufficient resistance and be constructed with material of the best quality.

ART. 15. The cuts and embankments shall be so built that the sloping ground will have the inclination that the nature of the terrain enables it to have, so as to avoid, as much as possible, all future caving in upon the track. The following types shall be adopted for this purpose:

Excavations.—A 1-to-1 slope in excavations on soil of a vegetable nature, mixed with sand or loose gravel, and on all soft soils.

A ½-to-1 slope on very hard soils and those mixed with compact gravel.

A ⅓-to-1 slope on very hard soils or very loose rocks.

A ⅕-to-1 slope on rocks not very loose, such as compact slate and sandstones.

A $\frac{1}{10}$-to-1 slope on hard rocks, such as granite, quartz, calcareous stone, metamorphic stones, etc.

Embankments.—A 1½-to-1 slope shall be adopted as a general rule in the case of embankments.

ART. 16. The contracts should specify the type, quality, and weight of the rails, as well as the nature of the ties and the distance they shall be placed apart.

ART. 17. At the curves there shall be a superelevation of the outer rail and an increase in the gauge of the track in relation to the radius of the curve and the probable maximum speed of the trains.

ART. 18. The crossings with existing tracks, or with other roads, shall be built either above or below the line, whenever this is possible; and shall be at right angles or as nearly so as possible. Whenever it is not possible to construct such crossings either above or below the track they shall be built on a level with it, at an angle of between 45 and 60 sexagesimal degrees, preferably in the vicinity of the existing stations, but some distance away from them.

ART. 19. Every railroad enterprise is obligated to repair at its own expense and maintain in perfectly serviceable condition those portions of the national or district roads which the said enterprise was compelled to use for its establishment, and must widen them at the places where the railroad passes over them, making possible an unobstructed passage at those points, with all the protection necessary for the passer-by, and repairing them at all those points where, on account of construction works or maintenance of the track they suffered any damage or were blocked up so that the traffic over these roads shall not on any occasion be paralyzed. This clause shall include private roads as well as canals and sewers that may be damaged by the passage of the train.

PAR. 1. The enterprises that fail to carry out the provisions of this article shall pay a fine of from 5,000 to 20,000 bolivars, at the discretion of the Federal Executive, and without prejudice to the civil responsibility.

ART. 20. The railroad enterprises that, in order to acquire facilities for their development, find it necessary to open a new road or widen existing roads, as well as to clear or canalize part or parts of a certain river, may, with the consent of the Government, carry out these operations at their own expense but shall not hinder free traffic over them or collect any remuneration for their use from persons passing over them.

ART. 21. The width of the platforms for railroads shall be the following, as a minimum:

For tracks of 0.61 meter: Three meters 50 centimeters at the excavations or cuts, and 3 meters at the embankments.

For tracks of 0.915 meter: Four meters at the excavations or cuts and 3 meters 50 centimeters at the embankments.

For tracks of 1.07 meters: Four meters 50 centimeters at the excavations or cuts and 3 meters 50 centimeters at the embankments.

For tracks of 1.435 meters: Five meters 25 centimeters at the excavations or cuts and 4 meters 25 centimeters at the embankments.

ART. 22. For the plans and sketches referred to in article 12 of this law the following minimum scales are established: 1/5,000 for the horizontal and 1/500 for the vertical distances. The metric system shall be used for the plans as well as for any other purpose connected with the railroad, as this is the official measuring system of the Republic.

ART. 23. If, in any case, circumstances indicate the convenience or necessity of altering the technical regulations established herein, such changes can always be made when previously authorized by the Department of Public Works.

IV. DELIVERY OF THE SECTIONS TO PUBLIC TRAFFIC AND PURCHASE OF THE RAILROADS BY THE NATIONAL GOVERNMENT

ART. 24. In order that a section or an entire line may be opened up to public traffic the Federal Executive shall formally receive the said line and its equipment.

ART. 25. In these contracts the Federal Executive may reserve the right of purchasing or not purchasing the railroads and their equipment, giving advance notice of six months to the respective enterprises. This purchase may be made at the option of the Government, either by appraisement, paying a premium of 20 per cent on the market value of the enterprises, or by paying the amount representing its capital at the time of the purchase, together with a premium of 10 per cent.

PAR. 1. In all cases of such sale the appraisement shall be made by experts, and the price of such sale shall be paid to the company at the time of the transfer.

V. PRIVILEGES

ART. 26. Railroad concessions may be made with an exclusive privilege for a period of time that shall be specified in each case, but may not exceed 40 years; such privilege shall consist in this: That the Federal Executive may not grant the authority to construct railroads or aerial transportation cableways that can offer competition to the contracting party within a territory the width of which shall also be fixed in every case, and which may not exceed 40 kilometers, figured at the rate of 20 kilometers on each side of the center of the track. It should be clearly stated in the contracts that the territory aforesaid may be traversed or crossed in any direction by one or more railroads or by aerial cableways that do not connect up the same terminals or intermediary stations such as are referred to in the said contract. Within the said territory there may also be constructed the railroads which are necessary for the exclusive service of mining concessions and which are established in conformity with the law regarding them.

ART. 27. The owner of a railroad shall have preference, all conditions being equal, during the period of his privilege for the construction of branches and extensions to his line. The term "branch" in this case shall comprise every ramification of the main line that does not exceed the limits of the privileged territory referred to in the preceding article, and by an "extension" shall be meant every addition to the railroad beginning at any of its terminal stations and the total length of which is equal to or less than the width of the said territory on each side of the center of the track.

ART. 28. For the construction of branches and extensions it will suffice for the contractor to make notification thereof to the Department of Public Works and submit the corresponding plans, which must be previously approved by this office; also making a deposit of 20 bolivars for each kilometer of new track, in conformity with the provisions of article 10 of this law; but if the said branches and extensions will cross the specified limits a new concession must be secured, and the contractor will always preserve the right of preference with respect to the matters defined above.

ART. 29. In the construction of branches and extensions the same provisions shall be observed as those established for the main lines. With respect to the gauge of the track, as a general rule they should be the same as for the main line, so as to avoid transshipments and the necessity for new rolling material, and the branches and extensions may also be constructed with the same gauge as those authorized in paragraph 1 of article 13.

ART. 30. In those concessions relative to branches and extensions there shall also be included any subbranch or secondary ramification that may start therefrom, provided they do not at any time cross the limits of the territory referred to.

ART. 31. The extensions treated of in these articles do not apply to the case in which the contractor is given the option to extend his line to some other point located at a greater distance than those herein stipulated: the said extension, being considered in the same manner as all main lines, shall be regulated by the clauses of the respective contract and by the general provisions of the law.

VI. RATES

ART. 32. The transportation rates shall be fixed by the concessionaire, but without exceeding certain maximum limits that shall be specified in each contract. The classes adopted, as well as any change that may be introduced in the course of operation, shall not be put into effect until they are approved by the Department of Public Works.

ART. 33. The Federal Executive shall have the right of demanding the reduction of the maximum rates when the annual tonnage transported by the railroad shall surpass a certain figure to be established in each case. In order to carry out this reduction the following rule shall be observed: If for any year the freight transported shall exceed the figures established, for the following years the reduced maximum rate shall be used; but if during any of the succeeding years the annual tonnage shall again decrease to a lower figure, the anterior maximum rate shall again be in force, etc.

PAR. 1. The percentage of the rate reduction to apply under any of the conditions aforesaid shall be fixed in every contract.

ART. 34. It shall be stipulated in every contract that the transportation of mail by the Post Office Department shall always be gratis along the entire line, and if accompanied by a special employee the latter shall also be transported gratis; that public employees on duty, and equipment belonging to the Government, shall be subject only to the payment of one-half of the established rates, and, in the case of soldiers and war material, a third part of the said rates.

PAR. 1. In the event of a disturbance of the public order and during its duration the rates established in this article, for the transportation of troops and war material, shall be reduced one-half, or one-sixth of the regular rate; and the railroad companies are obligated to facilitate, by all the means at their disposal, the rapid movement of troops and war material belonging to the National Government.

ART. 35. A reduction of 50 per cent shall also be made from the established rates in favor of tools, machinery, and other equipment intended for the construction and maintenance of roads, for the transportation industry, and for agricultural machinery destined for the territory served by the railroad.

VII. CONCESSIONS AND FRANCHISES GRANTED BY THE NATIONAL GOVERNMENT

ART. 36. Railroad enterprises shall be subject to the payment of all the taxes of a general nature for which they may be assessed, but they shall not be subject to the payment of any tax that especially burdens them.

ART. 37. The Federal Executive shall grant railroad enterprises full ownership of public lands necessary for the location of the track and the stations, shops, and storehouses in those places where land of this class may be alienated for this purpose; to carry out this provision there may be assigned to the said enterprises in the aforesaid places a strip of land not to exceed a width of 60 meters in all, measuring 30 meters on each side from the center of the track.

PAR. 1. In order to render this cession effective, no special title granted by the National Government shall be required; because the contract itself covering the railroad concession, executed for this purpose by the Department of Public Works, shall serve as a title; and the said contract shall specify in each case the width of the territory referred to.

ART. 38. The Federal Executive may also grant a greater area of the said lands on each side of the railroad lines, according to the needs of the latter, and in conformity with the law of public lands. This cession of lands shall not be made in one continuous strip, but in alternate divisions, so as to retain a tract of public land equal to the adjacent sections granted to the railroad enterprise.

PAR. 1. These tracts shall not be assigned except in those places along the railroad where there may be public lands adjacent to the said railroad, and that may be legally alienated; and it is understood that this concession is not cumulative; that is, in the event a certain section of the railroad has no adjacent public lands and others of that character it shall not be permissible to acquire in another section the equivalent of the tracts corresponding to this shortage.

ART. 39. As a basis for estimating the total area of public lands that may be adjudicated by virtue of the preceding article, a maximum of 50 hectares is established for each kilometer of track; that is, for each kilometer of the railroad where there may be public lands of the conditions aforesaid there shall correspond to it a tract measuring as follows: One thousand meters lengthwise along the railroad by 500 meters in depth as a maximum.

PAR. 1. In those cases whereby the contractors also agree to establish colonization enterprises the public lands granted may be up to 100 hectares for each kilometer of track; that is to say, for each kilometer of the railroad where there may be public lands of the conditions aforesaid there shall correspond to it a tract measuring 1,000 meters lengthwise along the railroad by 500 meters in depth as a maximum.

PAR. 2. In the event there do not exist, in any place, public lands having the maximum depths specified in this article the said maximum depths shall be limited to the actual measurement of the land at those places. In the same manner, if there should not be public lands in all the extension of a kilometer of the railroad, but only in a fraction of a kilometer, the length of the adjudication, at that place, shall be limited to the actual length of the said tracts in the direction of the line, always observing, with respect to the depth, the provisions prescribed herein.

ART. 40. In all such grants of public lands exception must be made of all such tracts which, under the laws of the Republic, are inalienable.

PAR. 1. The Federal Executive, if he deems it convenient or necessary, may grant to railroad contractors merely permits of passage over these lands without thereby involving any transfer of ownership.

ART. 41. The right of ownership that is granted to these enterprises involving public lands shall not be actually given until after the railroad is delivered to public service and the colonization obligation, if any, has been fulfilled.

ART. 42. The railroads referred to in this law are of public utility, and, consequently, are subject to the expropriation of lands of private ownership necessary for the road and for its side tracks, shops, warehouses, and storehouses; this expropriation shall be made as provided for in the national constitution and the laws regarding this subject.

ART. 43. In contracts for the construction of railroad lines the following immunities shall be granted:

(*a*) The importation, exempt from all customhouse duties, for the first 25 years of the concession, of all material, machinery, tools, implements, and chattels necessary for the construction, operation, and maintenance of the railroad and its appurtenances, it being understood that this immunity shall become ineffective if it is proved that one or more of the articles thus exempted were intended for other utilization than for the needs of the enterprise, the object of this contract, without having secured the express permission of the Department of Public Works. For the effects of the said exemption from custom duties the respective provisions of the code of property shall be carried out.

(*b*) The right of removing from the national forests, without any reimbursement, the lumber necessary for the construction and maintenance of the line and its appurtenances; this right shall be restricted in conformity with the laws and regulations in force covering this matter at the date of the respective contract.

(*c*) The right of removing from lands of national ownership the material that may be necessary for the construction and maintenance of the line.

(*d*) The permission to construct telegraph and telephone lines for the service of the enterprises, under the regulations and provisions that the Government has made or may make regarding this matter, and obligating the concessionaire to transmit gratuitously over his telegraph or telephone lines all official dispatches in case of necessity. On the other hand, the contractor shall be granted the free use of the national telegraph and telephone system, occasionally, in matters relating to the construction and service of the railroad.

(*e*) The employees and laborers of Venezuelan nationality engaged by the railroad enterprises shall not for any cause be drafted for military service, except in a case of international war; but it is their duty to exercise, within the meaning of the law, the functions of armed police in the demarcations of their respective places of employment, whenever public order so requires, and in accordance with what the Government may prescribe therefor.

VIII. FINAL PROVISIONS

ART. 44. Railroad enterprises are obligated to furnish the National Government whatever information may be requested in regard to their affairs.

ART. 45. Every railroad that may be constructed in Venezuela, whatever the law authorizing its construction, shall be subject to the provisions of this law,

Art. 46. The Federal Executive shall regulate the construction and operation, not only of private railroads, built by virtue of legal concessions or franchises, but also the construction and operation of private railroads without any legal franchise, used for the private service of agricultural, industrial, or other private enterprises, in all cases in which the said construction and operation is connected with the public safety and order, and for the preservation and protection of national interests.

Art. 47. Every enterprise owning a line having a gauge between the rails less than 1.07 meters may change the line to the said gauge, or to one of 1.435 meters, when it is believed to be convenient and the approval of the Department of Public Works has been previously obtained.

Art. 48. Railroad enterprises now existing in Venezuela shall continue to regulate themselves according to their respective contracts.

Art. 49. The Federal Executive is authorized to make regulations for carrying out this law.

Art. 50. All previous laws and provisions on this subject are revoked.

Given in the Federal Legislative Palace, in Caracas, on the 25th day of May, in the year 1918, the one hundred and ninth year of independence and the sixtieth year of the federation.

The regulations for the operation of railroads in Venezuela, decreed by V. Marquez Bustillos, as provisional President, are reproduced below:

PART I.—TECHNICAL OPERATION

CHAPTER ONE.—*Technical inspection department of the National Government regarding railroads*

Article 1. The technical inspection of the operation of the railroads of Venezuela, which in the organization of the National Government is the function of the Department of Public Works, shall be carried out by the said department through the agency of the Administration of Transportation Routes and Aqueducts; which, for the purpose of carrying out the provisions established by these regulations, may make use of those engineers that are under the orders of the said department, foreign engineers (if necessary) appointed therefor, and special inspectors appointed by the National Executive for the inspection of traffic on every railroad.

Art. 2. The Administration of Transportation Routes and Aqueducts of the Department of Public Works shall make an examination of the plans and sketches that, in accordance with article 13 of the Law of Railroad Concessions in force, should be submitted to the said department by the enterprises constructing railroads in Venezuela, by virtue of concessions granted by the National Government; and, with respect to the said plans and sketches, the aforesaid administration shall make its reports to the Department of Public Works.

Art. 3. Upon addressing to the Department of Public Works the request for opening up to service a certain railroad, or a section thereof, the enterprises shall submit to the said department the following documents:

1. A general, explicit plan of the construction work, using the scale of 1/5,000, on which shall be shown the principal buildings.
2. A longitudinal sketch, on the scales of 1/5,000 horizontal and 1/500 vertical, on which are shown the grades and the location of the most important buildings, together with a planimetric diagram of the curves and the straight lines.
3. Plans of the principal buildings on scales convenient for estimating the details thereof.
4. Plans of the stations on the scale of 1/1,000.

Art. 4. The documents enumerated in the preceding article shall be duly examined by the Administration of Transportation Routes and Aqueducts, the director of which, either personally or through the engineers and inspectors designated in article 1, shall assure himself of the proper operation, safety, and efficiency of the railroad and its accessories, it being understood that the line may not be authorized for public traffic or officially opened up without a previous favorable report from the aforesaid administration.

ART. 5. During the operation of the railroad lines the Administration of Transportation Routes and Aqueducts shall make a report, whenever the secretary of the branch of service concerned deems it convenient, regarding the condition and safety of the track, the stations, the rolling material, and the traffic service, for which purpose he shall secure from the respective enterprises and the special engineers and inspectors aforesaid all the data necessary for the greater explicitness and efficiency of their reports.

PAR. 1. If the said reports indicate that the railroad lines do not satisfy the conditions necessary for the safety of traffic, either because of defects originating in the construction or of deteriorations sustained during their operation, this shall be considered sufficient cause to order a suspension of traffic as long as the work required to put the lines in a perfect condition for service is not satisfactorily performed.

ART. 6. In the construction of railroads whereby the concession contracts specify that by reason of special circumstances the National Government is to contribute a part of the construction expenses of each kilometer, the Administration of Transportation Routes and Aqueducts shall examine the estimates that the enterprises must previously make for the work of constructing each kilometer, and shall observe that the construction work and the rolling material used correspond in their class to the value given to each kilometer of the line, so that upon completion of the line and its accessories the same will represent in its entirety the amount that results from the number of kilometers constructed. For this purpose the Department of Public Works shall appoint for such cases an inspector ad hoc, who shall reside in the place where this work is being performed and shall have charge of seeing that such work is done at no greater cost than has been permitted in the approved estimates, and if for causes not foreseen the said cost shall increase during the performance of the work, the aforesaid official shall make an examination of the reasons therefor and render a report regarding the matter and submit it to the consideration of the Department of Public Works.

ART. 7. The Administration of Transportation Routes and Aqueducts shall examine all matters referring to railroads which are submitted to the Department of Public Works for its consideration, and shall secure information on all questions that may arise concerning violations of the clauses of these regulations or of the special regulations that the railroad enterprises may prescribe for their private service, and shall submit all the information obtained to the department for a definite decision. It shall especially be the function of this administration to procure a knowledge of and examine all matters relative to the technical operation of the railroads of the nation; that is, to take such measures as may tend to assure the operation of railroads under conditions of adequate safety, regularity, and speed.

ART. 8. If the Government should decide, in the future, to reestablish the office of technical inspector of the railroads of Venezuela, this official will replace the Administration of Transportation Routes and Aqueducts, performing all the functions conferred by these regulations on the said administration; he shall establish a special office on the premises of the Department of Public Works, that shall serve as an auxiliary of the department bureaus, and shall collect all the material necessary to organize the library and technical archives of that branch of the Government.

ART. 9. The Administration of Transportation Routes and Aqueducts shall supervise the carrying out, on the part of the special inspectors of the railroads, of all the articles of these regulations that prescribe their duties, and the provisions which may hereafter be directed by the Department of Public Works in regard to this subject.

ART. 10. On all the railroads existing in this country, while under construction or operation, there shall be one or more special inspectors, appointed by the Federal Executive, who, in addition to being agents of public order, have the functions conferred upon them by these regulations relative to the technical operation of the railroads. As agents of public order, these officials are under the orders of the Department of Public Works and also of the Department of the Interior, of the highest civil authorities of the States, and of the Governor of the Federal District. As regards the technical operation, they are only under the orders of the Department of Public Works.

ART. 11. The special inspectors are obligated to keep in communication with the Departments of the Interior and of Public Works, concerning the affairs of which they are in charge.

Art. 12. For the purpose of properly formulating their correspondence as well as for guiding themselves the more conveniently in the exercise of their functions, the special inspectors are obligated to become acquainted with these general regulations and the person or persons of the enterprise where they will be on duty.

Art. 13. The special inspectors, on every occasion when conditions so require, shall make their reports to the Department of Public Works, concerning the state of the lines inspected by them, taking as a basis or guidance, for recording faults and defects, the provisions established therefor in these regulations, which must be observed by the railroad enterprises. During the month of January, each year, they shall render a general report covering the past year.

Chapter Two.—*Maintenance of the line and its appurtenances*

SECTION I.—MAINTENANCE OF THE LINE

Art. 14. The railroad enterprises are obligated to constantly maintain in a good state of preservation all the tracks and buildings forming their property, so that train service can be carried on with ease and without any danger, at the maximum velocity permitted on each line.

Art. 15. The following shall be considered as part of the appurtenances of railroad enterprises, which must be maintained by them, besides the stations, workshops, buildings, etc.:

1. Grade crossings, which must be constructed and maintained without any unevenness as regards the surface of the roads, so that there shall be no inconvenience to the movement of ordinary vehicles.
2. Passages over or under the track at crossings with existing roads.
3. The fences located along the right of way of the railroads and the barriers placed at the grade crossings.
4. The interlocking machinery and its accessories, switch points, turntables, signal apparatus, water stations, cranes, stationary machinery, etc.
5. All roads leading to stations, provided they were built for this sole purpose, without, therefore, forming a part of highways previously in existence, or with the object of reopening previous means of communication that were interrupted by the railroad.

Art. 16. Railroad enterprises must also repair at their own expense and maintain in good condition for service, in conformity with article 20 of the Law of Railroad Concessions, those parts of the national or district highways which they used or were compelled to use in establishing the line—being obligated to widen them in the places where the railroad traverses them, in order to enable a free movement with all the protection necessary to the passerby, and to repair them in all places where, on account of the construction or maintenance work of the line, they have undergone any wear and tear or become blocked, so that traffic shall not be paralyzed at any time. This clause shall also include private roads, as well as the ditches and canal systems that may be damaged by the railroad.

Art. 17. Railroad enterprises, under normal conditions, must have available all the necessary personnel along the right of way for maintaining the track in a perfect condition for service. In the event of the occurrence of great landslides or extraordinary wear and tear that may suspend traffic and that, because of its magnitude, can not be repaired or removed promptly by the personnel usually in charge of the maintenance of the line, the enterprises are obligated to continue the work day and night, using all the laborers that may be necessary, so as to resume traffic as soon as possible, and, while this is being done, to operate the trains necessary for transferring passengers whenever such transfer is possible.

Art. 18. The tranportation of passengers and animals on the railroads is absolutely prohibited over those sections of the track that have not been fully equipped for such transportation. (See part 3, chapter 3, "Penalties," article 195.)

Art. 19. In order to avoid accidents at the grade crossings on the public highways, the enterprises should place, at their own expense, movable barriers, which should be guarded by watchmen or gate keepers.

Art. 20. Railroad enterprises are obligated to build fences along their right of way, on both sides, at those places where they are necessary for safe operation and public protection, especially between the railroad lines and the public highways extending alongside the track, and should be built at such a level as will make it easily possible for persons and animals to move from the highway to the track.

PAR. 1. In the cattle-raising districts, the fences should have such an arrangement and strength as to be able to resist the passage of animals.

PAR. 2. If contracts or agreements have been made between the companies and the neighboring proprietors, whereby the latter are to construct and maintain these fences, the said companies shall observe that the said work is performed in conformity with the provisions of this article and shall be responsible for its maintenance.

ART. 21. The enterprises are obligated to place along their right of way kilometer and change-of-gradient posts, in such positions as to be visible to the train crew.

ART. 22. Between two tracks that connect or cross there should be placed safety posts to indicate the places where rolling material can be moved without endangering the traffic on the other track.

ART. 23. The section chiefs or foremen of the gangs employed for the maintenance of the track shall observe that the following regulations are complied with:

1. Each gang must be provided with flags or signal boards and signal lamps to indicate to the trains what precautions must be taken on passing over those parts of the track that are being repaired and even to stop the trains if necessary. The meaning of the signals shall be the same as indicated in the respective section of these regulations.

PAR. 1. When the condition of repair work on the track, or of some obstacle existing as a result thereof, renders impossible or dangerous the passage of trains the danger signals shall be plainly shown at a distance of from 100 to 300 meters, according to the speed of the train, on both sides of the point where the impediment exists, even during the hours when it is not usual for trains to pass by; these signals shall cease to be shown only when the obstacle has been completely removed. If the said point at a distance of from 100 to 300 meters from the obstacle is located within a tunnel or in the middle of a bridge or viaduct, the danger signal shall be placed at the extremity most distant from the said structures.

PAR. 2. The same signals shall be displayed, at the same distances, when use is made in this work of cars or trolleys for transporting dirt or material over the line, while they are on the main line.

PAR. 3. When the repairs are of such a nature as only to require a slow movement of the trains the caution signals shall also be displayed at a distance of from 100 to 300 meters on both sides of the place where the work is being done.

2. The section chiefs or the foremen shall make a personal inspection as often as may be necessary of the entire extent of their section and especially after any heavy rain or storm.

ART. 24. The technical managements of the enterprises shall issue the necessary instructions to their subordinate employees for maintaining the tracks and their equipment in a perfect condition of maintenance and service.

SECTION II.—PERMANENT WAY INSPECTION

ART. 25. Railroads must be inspected as to the safety of their operation service at least once every day, especially when the speed permitted exceeds 20 kilometers per hour. This work shall be performed by the inspectors or watchmen, whose number shall be fixed in each case in accordance with the needs of the service and whose inspection routes shall be reported to the Department of Public Works.

PAR. 1. The inspection of the track crossings over national or country highways is the duty of the railroad enterprises, as well as those crossings over private roads existing prior to the establishment of the lines.

ART. 26. The sections of the line to be covered by each inspector shall be limited in such a manner as to make it practicable that the necessary inspections be duly performed. Sections having tunnels, bridges, and viaducts will require a greater amount of inspection.

ART. 27. The function of the inspectors or watchmen of the line is to carefully inspect their section, going over it at least once daily, especially when the speed exceeds 20 kilometers per hour, and to notify trains if the line is open, if they should travel slowly, or if there is any danger ahead of them on the line. For this purpose they shall be provided with the flags and lamps necessary to make the signals required, according to the code of signals established by these regulations.

ART. 28. Whenever the inspectors or watchmen notice any obstacle or defect on the line which can not be removed or repaired by them they shall immediately report the matter to the nearest superior official, so that the necessary repairs can be made as quickly as possible.

ART. 29. The equipment of every watchman or inspector or of the switchmen must consist of at least the following objects: A watch set according to the time piece used to regulate the movement of trains, a whistle or horn, a set of flags and signals, a signal lamp, a switch key, and the tools necessary for making slight repairs to the track. They should be thoroughly familiar with the schedule of all the trains that pass through that section.

ART. 30. It is the duty of the watchmen or inspectors to put into effect the provision forbidding persons or animals from walking on the track. In order to carry out this provision they shall, if necessary, secure assistance from the other employees of the line or from the local authorities.

ART. 31. It is the function of the switchmen to inspect their respective switches, so that they may always be in good, serviceable condition and well oiled, to work the levers and make signals to the trains, and to report to the nearest superior official, without delay, any defect that they may observe in the said equipment which can not be repaired by the switchmen themselves, so that the said damages may be quickly remedied.

ART. 32. The special railroad enterprise regulations shall designate the switches that should merely be closed and those that should be locked with keys or bolts.

ART. 33. In those sections having steep grades, the switches in the direction of the incline shall always be kept open toward a spur.

ART. 34. No switchman or watchman shall be permitted to abandon his post until replaced by another person ordered there by the chief of the station or by the nearest foreman, and the said person shall always be given notice of the trains expected to pass by his post.

SECTION III.—TELEGRAPH AND TELEPHONE SERVICE

ART. 35. Every railroad enterprise is obligated to install a telegraph system with registering apparatus for assuring the safety and regularity of train service.

ART. 36. The wires, as well as the batteries and other equipment constituting the system, must be kept in a perfect condition of service. In the case of the wires the enterprises shall employ all the linemen that may be necessary, and the shopmen shall be charged with the maintenance of the apparatus.

ART. 37. The special railroad inspectors appointed by the National Government, as well as the local authorities, can make use of the telegraph and telephone systems of the various enterprises through the employees of the respective stations, but only for matters concerning the service of that particular railroad.

ART. 38. According to article 44, line (*d*), of the law in force regarding railroad concessions, the enterprises, in cases of necessity, must transmit, exempt from all charges, official dispatches over their telegraph or telephone lines. On the other hand, the contractor is occasionally granted the gratuitous use of the national telephone and telegraph systems for matters relative to the construction and service of the railroad.

ART. 39. The telegraph and telephone systems belonging to the railroad enterprises may not be used for public service in competition with lines belonging to the National Government or to private concerns duly authorized. Private messages can be sent over the former only in the event that the latter do not exist, and also in urgent cases when the existing lines can not, for some reason, be operated, and provided that the traffic service of the railroad is never injured thereby.

SECTION IV.—STATIONS

ART. 40. Not only the stations, but also the warehouses annexed thereto, should be kept very neat and in a good condition.

ART. 41. The capacity of the warehouses and stations and their respective personnel must be adequate for prompt and efficient public service, and the weights and steelyards used shall be periodically verified to assure their exactness and correctness.

Art. 42. The buildings for passengers at the stations shall be inclosed and the name of the station must be plainly shown. They must be provided with waiting rooms and washrooms and toilets for the use of passengers and employees.

Art. 43. Every station must have a clock, so placed that the public can plainly see it. This clock must always show time five minutes slower with respect to the legal hour of the Republic.

Art. 44. At all the stations there should be shown, in full view of the passengers, the schedule of all the passenger and freight trains. There shall also be posted copies of the corresponding rates and the special regulations of the railroad which should be observed by the passengers and the general public. At those stations where there are ticket offices the schedules and rates shall be posted at the side of the windows.

Art. 45. Stations where trains are due to arrive at night must be properly illuminated.

Art. 46. Railroad enterprises must submit to the Department of Public Works for approval the cross-section sketches of their respective open lines; that is, the transverse sections that must always be kept clear of any obstacle for the unhindered passage of trains, the said enterprises being held responsible for the maintenance of the approved open-track sections—which applies not only to the stations but also to the whole extent of the lines.

Art. 47. It shall be the duty of the station agents to see that the main line in the sections contiguous to the stations are always clear of cars or engines not in immediate use, which should remain on the sidetracks and spurs.

Art. 48. The station agents shall exercise the strictest supervision over all his departments and also over the operating condition of the sidetracks and switch blades.

SECTION V.—BRIDGES, VIADUCTS, AND TUNNELS

Art. 49. The technical directors of the railroad enterprises shall make frequent inspections of the condition of the bridges and viaducts, their foundations, masonry, arches, and their wooden and metallic structures, and shall order the prompt repairing of any defects they may notice, especially of such defects as may endanger the stability of the works. A close periodical inspection shall also be made of the rivets and bolts in the metallic bridges and viaducts.

Art. 50. The metallic parts of the bridges and viaducts shall be periodically painted as often as may be necessary for their preservation in good order, considering the condition and location of each structure.

Art. 51. The ditches and drains shall always be kept clear of all obstructions and vegetation, as also the beds of the rivers or the passes in the sections near the bridges or culverts that serve to carry off the waters.

Art. 52. Viaducts having a length of more than 50 meters shall be provided with huts to shelter the watchmen and workmen of the line. On all the bridges and viaducts having a span of more than 20 meters and a curve of a radius less than 200 meters there should be placed guide rails or safety beams.

Art. 53. In the event that filtrations of water are observed in the tunnels which may be dangerous to the stability of the structure the defect must be remedied as soon as possible, in conformity with the plans that the technical directors of the railroad may make in each case. The same procedure is to be followed in the case of any wear and tear that might cause the collapse of the said structures.

Par. 1. While these repairs are being made in the tunnels all the necessary precautions must be taken for the protection and safety of the laborers performing the work and for the passage of the trains during such repairs.

Art. 54. Tunnels having a length greater than 50 meters must be provided with safety recesses for the personnel in charge of the inspection and the maintenance of the line; the said recesses must be located at a distance of 50 meters or less from each other or the mouths of the tunnel.

CHAPTER THREE

SECTION I.—MAINTENANCE OF THE ROLLING MATERIAL

ART. 55. Railroad enterprises are obligated to maintain their rolling material in perfect, serviceable condition, so that it can be utilized while running at the greatest permissible speed without endangering safe traffic.

ART. 56. The workshops must be adequately equipped and manned in order to make the repairs to the rolling material owned by the enterprises, and the warehouses must be sufficiently provided with material and tools.

ART. 57. The rolling material of the enterprises must be adequate as to both number and capacity to take care of the traffic service even during the time when there may be an increase.

ART. 58. Every locomotive must have an adequate supply of coal and water, sufficient to enable it with ease to traverse the distance that separates it from the station where it can procure a new supply of both of these elements.

ART. 59. Locomotives in motion must carry the tools and implements necessary to perform the work and make the light repairs that may be required during the trip and to prevent accidents.

ART. 60. The locomotives shall also carry an alarm bell with a cord or an electric apparatus that places them in communication with all the cars on the train.

ART. 61. In order to hinder the skidding of the locomotive wheels and consequently their sliding down steep grades, the said locomotives shall always be provided with containers filled with sand to be spread over the rails when necessary.

ART. 62. If a locomotive suffers such damages during a trip as could endanger the safety of traffic, the engineer must stop the train immediately and repair the defect, if possible, so that he can bring the train without any danger to the next station at least. But if the engineer finds that it is impossible for him to repair the damage the conductor shall then request an emergency locomotive, in which case the train shall not be moved until such locomotive arrives; but if, after having requested the emergency locomotive, the engineer succeeds in putting his engine in such shape as to be able to continue the trip, the proper notice thereof shall be given and the train shall not be moved from the place until orders are given to do so.

ART. 63. In addition to the daily and emergency repairs that may be required the locomotives must be practically taken to the workshop for inspection there, both outside and inside, and for making the repairs, changes, etc., that may be necessary. The external inspection shall be made at least once every three years, and the interior inspection at least once every six years—the greater frequency of these inspections depending on the number of kilometers traveled.

PAR. 1. The dates of these inspections, the work done, and the other circumstances concerning each engine shall be recorded in a table arranged according to the annexed sample [not reproduced here].

ART. 64. It is forbidden to carry within the locomotives passengers, packages, or other objects aside from the provisions or clothes necessary for the discharge of duty.

SECTION II.—PASSENGER AND FREIGHT CARS

ART. 65. Passenger coaches must be maintained with the cleanliness, decency, and comfort required for the use to which they are put, and must be painted with due frequency.

ART. 66. On passenger and mixed trains all the cars must have safety chains, besides the principal stirrup bolts to join the buffer blocks. On freight trains the said stirrup bolts for joining the buffer blocks must be of adequate strength, in proportion to the weight of the trains.

ART. 67. Passenger coaches must be provided with good lamps, to be lighted at night or on going through tunnels more than 50 meters long.

ART. 68. All cars, with the exception of those intended for transporting ballast and other material, must rest on suspension springs and shall be provided with coupling hooks or spring buffer blocks.

ART. 69. Every car must bear on the outside the following inscriptions: The name of the railroad enterprise to which it belongs; a serial number; the tare or net weight of the car; and the date of the last inspection in the shops; and on the freight cars should also be shown the maximum load that can be placed therein.

Art. 70. In the interior of the passenger coaches should be posted a copy of the special regulations of the enterprise, which should be observed by the passengers and the public in general.

Art. 71. All first-class coaches must be provided with water-closets, and they shall also be installed in the second-class coaches that are to be constructed in the future.

Art. 72. In every coach there should be, within reach of the passengers, a device for ringing the bell, or sounding the alarm whistle, or stopping the train.

SECTION III.—BRAKES

Art. 73. Every train running over a railroad track whereon there are grades steeper than 1 per cent, or traveling at a greater speed than 20 kilometers per hour, must be equipped with a continuous and automatic brake satisfying the following conditions:

1. The brakes on all the cars must be connected with each other and to the locomotive in such a manner that the engineer can have them under his control and can apply all of them by one single movement.
2. It shall be possible not only for the engineer but also for the brakemen on each car to close the brakes.
3. In the event that the train is divided into two or more sections the brakes must function automatically, for this same reason, in each one of the said sections into which the train may have been split.
4. The wear and tear, or possible defect, of any part of the brake in a car must not impede the perfect operation of the brakes in the other cars.
5. The enterprises, in their special regulations, must establish the number of brakes that must be attended to by the crew on each train in proportion to the weight of the latter and the grade of the tracks.

Art. 74. Locomotives must be equipped with hand brakes, air or steam brakes, and reverse steam brakes. The first, principally in charge of the fireman, is especially used for switching operations and for making up the trains at the stations; the second, in charge of the engineer, shall be used in case of danger, when it is necessary to stop the trains quickly, and also to replace the other brakes when they do not function or produce the necessary force. The third is a very strong brake for lines having steep grades, and for the same purposes as those indicated for the steam brakes.

Art. 75. At the usual stopping places of the trains, whenever it is necessary to decrease their speed, there shall be used the continuous brake and the hand brake of the locomotive, and care should be taken to fix the brake of the cars before fixing the hand brake of the locomotive.

Art. 76. Whenever the continuous brake, as a result of some accident, can not be operated, the car brakes shall be worked by hand by the brakemen, for which purpose they shall have the necessary instruments. The train shall then continue to move, the engineer making the signals regulating the opening or closing of the brakes.

Art. 77. The continuous compressed air brakes can be made to function by the passengers themselves in case of danger by means of a lever that shall be located within their reach in the interior of each coach. Instructions for using these levers shall be posted on the side of them.

Art. 78. Engineers are obligated to stop the train immediately when the brake is applied in any of the cars, which they will know by the decrease in the speed traveled or by the indication of the compressed air gauges, if the brake used is of that type, or by the difference in the tension of the cord in the case of the Heberlein brake.

Art. 79. For cases not provided for in article 73 it shall suffice that each passenger car be equipped with its respective hand brake, and those on freight cars must be in due proportion to the weight of the train and the grade of the track. The last car in a train should always be equipped with a hand brake in charge of an employee.

Art. 80. On railroads having sections where the grades exceed 3 per cent, the following regulations should be observed as regards the brakes:

1. All locomotives must be equipped with a reverse steam brake, Le Chatelier system.

2. It is recommended to engineers, firemen, and brakemen that on operating the brakes on the sloping portions of the line, or when the rails are wet from rain or some other cause, they should be cautious, in so far as it is possible and the character of the equipment available enables them to do so, to not entirely tighten the brakes all at one time, but to tighten and ease the brakes alternately, so as to avoid the skidding of the trains and to endeavor to preserve the rotary movement of the wheels.

CHAPTER FOUR.—*Signals*

ART. 81. The term "signals" includes all the apparatus or signs intended to notify the agents or employees of trains of the condition of the line and other circumstances connected therewith from the point of view of traffic. The fundamental principle is that the absence of all signals indicates that the line is open.

ART. 82. This chapter also includes the signs that must be made by train agents to announce the approach of such trains to the employees of the railroad and to the public.

ART. 83. All railroad employees must always pay attention to what is indicated by the signals, and if they neglect to do so they shall incur a penal responsibility.

ART. 84. All signals that should be displayed in railroad traffic shall be uniform throughout the Republic and used equally on all the railroad lines in such cases and as provided for by these regulations.

ART. 85. This chapter distinguishes fixed signals, signals on the trains, signals by flags and lights, signals by mechanical whistle, signals by the locomotive bell, and signals by hand whistles.

ART. 86. Optical signals are usually made by colors—white, green, and red—during the day by flags, semaphores, or disks, and during the night by lanterns.

ART. 87. In general, the white color indicates that the train can have the right of way; the green, to go slowly; and the red, to stop.

ART. 88. The same signals are used for trains and for engines traveling alone.

ART. 89. The signals prescribed for use at night must always be employed even when the moon is shining.

SECTION I.—FIXED SIGNALS

ART. 90. At all the railroad junctions there shall be erected fixed signals in the direction of both lines. These shall consist of semaphores or posts with arms. The horizontal position of the arms signifies to stop. The signal to proceed shall be made by raising the arm to an oblique position. During the night these signals shall be made with red and green lamps, respectively.

PAR. 1. There shall also be erected semaphores at the entrances to the principal stations and at all those places where branches of the line extend out, according to the necessities of traffic.

ART. 91. There should also be placed along the lines, for the better guidance of engineers, small fixed posts, indicating the changes in the grades, with the figures showing the two gradients existing there, and also posts to remind the engineer of the places where he must sound the whistle on nearing the stations, tunnels, junctions, etc.

ART. 92. The maintenance gangs of the railroad lines must set up on both sides of those places where repair work is being done rods with green disks if the trains should pass slowly over the point in bad condition or undergoing repairs, and rods with red disks if the trains should stop. During the night the disks shall be replaced by lanterns with red or green glass.

PAR. 1. The disks or lanterns shall have the green or red color on one side and the white color on the opposite side, and they shall be placed in such a way that the red and green colors shall always appear toward the outside of the places in bad condition or undergoing repairs and the white color toward the interior of such places.

PAR. 2. These disks or lanterns shall be placed at a sufficient distance from the track in bad shape, according to the conditions at that point, the grades, etc., so that there is ample space to decrease the speed or to stop the train before arriving at such a point.

PAR. 3. These signals should be permanently erected until the obstacle has been completely eliminated, even when no train is expected.

Art. 93. The signals for indicating the direction in which a sidetrack is located shall always consist of disks or lanterns placed on rods in accordance with the following rules:

1. If the sidetrack is located at a right angle to the line, the disk shall be placed parallel to the track, so that the engineer can see it from the side. At night the lantern shall be placed with its white glass in the direction of the track.

2. If the sidetrack is located so as to curve away from the line of direction of the track, the disk or the lantern shall ordinarily be so placed with relation to the track as to show a face with an arrow inclining at an angle of 45°; this arrow must indicate the direction of the sidetrack. On the reverse sides of these faces the disks or lanterns must have a white circle.

3. The direction in which a sidetrack is clear can also be recognized by the position of the counterweight on the switch stand, which is always inclined away from the side in which the sidetrack is clear.

4. On the double sidetracks the special disk or lantern there shall ordinarily be so placed with relation to the track as to show on both sides faces having divergent arrows, if the sidetrack is located toward both curves.

SECTION II.—SIGNALS ON TRAINS

Art. 94. After sunset and also during the day, in sections where there are many tunnels, every locomotive in service shall carry in front one or two white lighted lanterns.

Par. 1. In the case of a special train dispatched without previous notice the foremost lantern, or one of the two, shall be red.

Par. 2. If the locomotive is traveling with the engineer's cab foremost, the signals shall be changed to that side, and if it is merely pushing the train the signals shall be placed in the front of the car on the end.

Art. 95. On every train there shall be placed, in the rear of the last car, a disk or red flag during the day and one or two lighted lanterns during the night, with red glasses in the rear and green glasses in the front.

Par. 1. In case a locomotive travels at night, not in train, there shall be placed in the rear end of it and in the center a lighted red lantern.

Par. 2. If a locomotive is used at a station for switch service, white lanterns suffice for the night, one in front and the other in the rear.

Par. 3. Hand cars or trolleys that travel during the day must carry a red flag and during the night a lighted lantern of the same color.

Art. 96. When a train is followed by another train or a special engine going in the same direction, the former must bear a green disk or flag on the last car, besides the terminal red disk or flag. If at night, two lanterns, one red and one green, shall be used.

Par. 1. In the case of only a locomotive followed by another or by a special train, there shall be placed behind the former during the night a lighted green lantern besides the red lantern, as provided for in article 95, paragraph 1.

Art. 97. In order to denote the approach of a special train or locomotive coming from the opposite direction a green disk shall be placed in the front part of the locomotive by day and a green lantern above the usual white lantern by night.

Art. 98. A white disk in the front part of a locomotive is a signal for the watchmen of telegraph and telephone lines, signifying that the wires should be inspected; this signal shall be repeated on the various trains and locomotives until the defect of the wires has been repaired.

Art. 99. Any object waved by a train employee toward an inspector during the day or a white lantern waved in the night are signals for the inspector, notifying him that there is an obstacle or defect on the line and an order for him to immediately inspect his section.

Art. 100. In the event a train, locomotive, or car is stopped on the line by accidents or for any cause, stop signals (red flags or lanterns) shall always be placed on both sides, at the distances provided for in article 92, paragraph 2.

Art. 101. If for any reason the speed of the train or the locomotive has been retarded to such a degree as to be possible for another train to overtake it, the signals provided for in article 96 shall be placed on the former.

SECTION III.—SIGNALS BY FLAGS, LIGHTS, ETC.

Art. 102. A red flag, a red board, or a lantern with red light signify danger, and are signals to stop the train.

Art. 103. A green flag, or a lantern with a green light, signify caution or precaution and are signals to run the train slowly.

Art. 104. A white flag, or a lantern with a white light, signify safety, and are signals to indicate that the track is entirely open and that, consequently, the train can pass at the ordinary speed.

Art. 105. A flag, a hat, or other object waved across the track, the arm alone moved violently by any person along the line, signify imminent danger, and are signals to stop the train. The same applies to a lantern or any lamp waved across the track during the night.

Art. 106. Any person is permitted to stop a train by displaying a danger signal for the purpose of saving it from an impending danger, but if the signal was made without any necessity therefor, with intention to do harm, it should be considered as an act punishable by law.

Art. 107. If the engineer should have any doubts regarding the meaning of any signal that is being made to him, he should proceed with special care or stop, according to circumstances, and seek explanations before continuing on the trip.

SECTION IV.—LOCOMOTIVE SIGNALS BY WHISTLE

Art. 108. A whistle regularly prolonged signifies attention and should precede any movement of the locomotive. In other cases the use of this signal should be restricted to those occasions when it is necessary to call the attention of the train or road crews.

Art. 109. The engineer shall sound the steam whistle, as a signal of attention, with a prolonged whistle, upon departing or approaching a station, tunnel, junction, etc., or in passing over curves where the presence of an object can not be distinguished at a great distance. The same signal shall be used for calling attention to anything in general.

Art. 110. A succession of short whistles is a signal that something unexpected has occurred, as, for example, the presence of persons or animals on the line, and is an attention signal for the conductors and brakemen on the trains. If the signals do not produce any effect, the engineer should open the cylinder cocks, to try to eliminate the obstacle, and for the purpose of avoiding an accident shall stop the train.

Art. 111. Two short whistles shall indicate that the brakes must be eased, and three short whistles that they should be tightened.

Art. 112. Other combinations of whistles may be used, in accordance with the private regulations of the various enterprises.

SECTION V.—SIGNALS BY THE LOCOMOTIVE BELL

Art. 113. The locomotive bell shall be sounded only in case of danger, and it is the duty of the engineer to stop the locomotive at once. This signal system can be replaced by having, in connection with the steam whistle of the locomotive, a cord which can be pulled by the conductor or the brakeman. The alarm signal in this case shall be one whistle regularly prolonged.

SECTION VI.—SIGNALS BY WHISTLES

Art. 114. One whistle regularly prolonged, made by the conductor, signifies that the train crew and the passengers should go to their seats and occupy them, and two whistles regularly prolonged is the signal for departure. This last signal shall not be made by the conductor until the station agent has given permission. When this signal has been made the engineer will repeat it with the steam whistle.

Par. 1. The signals referred to in this article which the conductor must make can also be given by means of the strokes of a bell.

Art. 115. The signals with the whistle in the case of switching operations at the stations shall be regulated by the following provisions:

1. One prolonged whistle signifies to "come on." As a substitute for this signal there may be a vertical motion of the arm, moving downward from a raised position, during the day or a lantern at night.

2. Two whistles regularly prolonged signify "go back"; for this signal there may be substituted a horizontal movement of the arm or of a lantern, according to whether it is made by day or night.

3. Three successive short whistles signify "stop"; for this signal there may be substituted a circular movement of the arm during the day or a lantern during the night.

CHAPTER FIVE.—*Traffic in general*

SECTION I.—RAILROAD CREWS

ART. 116. All railroad employees intended to come in contact with the public to handle matters connected with the traffic service must wear a special uniform.

ART. 117. No railroad employee, in the exercise of his functions, is permitted to fight, become intoxicated, abandon his post, carry on arguments, or criticize the conduct of another employee not under his orders. The railroad enterprises, in their special regulations, shall establish appropriate penalties for these misdemeanors.

ART. 118. All railroad employees must show to the public, and to passengers especially, the personal consideration which courtesy and culture prescribe.

ART. 119. Railroad enterprises are responsible for the deficiencies occasioned by the insufficiency, incompetence, or bad conduct of their employees in the exercise of their duties, all in conformity with the law.

ART. 120. The minimum crew for trains, freight as well as passenger, must be the following: A conductor, an engineer, a fireman, and the necessary brakemen, considering the conditions on the line and the rolling material.

ART. 121. The conductors of the trains are subordinate to the administrative and technical direction of the enterprises, to the traffic inspectors, and to the station agents during the stay of the trains in the respective stations. In turn, the conductors are the heads of the trains while en route, having authority over all the crew; although this does not signify that they should not be guided by the recommendations of the engineers as regards the technical traffic service, they should consult the latter on every occasion when circumstances require it.

PAR. 1. If there should be several conductors on one train, the senior conductor shall be their superior, as well as that of the train crew; and in the case of a locomotive traveling alone the engineer shall exercise all the functions attributed to the conductor in this article.

ART. 122. Conductors, before the departure of every train, must assure themselves that the cars are in good condition, well oiled, and firmly connected; that the brakes are operating properly; that the safety chains are placed, as well as the cords that enable the blowing of the alarm bell on the locomotive, or the steam whistle from the cars; that the prescribed signals are placed on the engine and on the last car, and that, in the proper spaces, there are carried a set of signals, and the materials, equipment, and tools that should always be on every train.

ART. 123. Conductors, while on duty, shall always have a watch set in accordance with the timepiece by which the movement of the trains is regulated.

PAR. 1. The head conductor on every train should always have a transit record in which he shall note the hours of departure and arrival at the stations and all the unusual matters that may occur during the trips.

ART. 124. Engineers and firemen are subordinated to their usual superiors, and during the trips to the conductors and station agents.

ART. 125. The engineer, as well as the fireman, must always remain on the locomotive which is in service. However, it is permissible for one of them to leave the engine for a short time during a switching operation or during a rest period, but he must not leave the station.

ART. 126. In the event that any train employee is incapacitated by an accident and can not continue on duty during a trip, the conductor shall discharge the duties of the said employee, or shall appoint some other member of the train crew competent for this purpose to fulfill them.

PAR. 1. If the conductor should be incapacitated, his place shall be taken—until the next station or the terminal station of the trip is reached—by the oldest brakeman.

PAR. 2. If the engineer should be thus incapacitated, the fireman shall immediately stop the train until another engineer has been requested and sent, or at least until the fireman has been authorized to act as engineer of the train, in which case he shall do so as far as the next station where a competent substitute can be secured, and in that event the engineer or the conductor should appoint an assistant to the fireman from among the train crew.

PAR. 3. If the person unfitted for continuing on duty should be the fireman, the engineer shall stop the train and request the necessary substitute from the conductor, and after securing the said substitute shall continue the trip until the station where another fireman on duty can be obtained.

SECTION II.—TRAIN SERVICE

ART. 127. Trains shall not be put in motion until the signal of departure has been given by the station agents, who shall not make this signal until they are absolutely certain that the line is clear up to the next station or signal location.

ART. 128. On their trips trains must adhere to the time prescribed therefor in the time-tables. The only permissible delays shall be those caused by obstacles on the track or other conditions that require unusual stops or a decrease in the ordinary speed.

PAR. 1. In case of delays in the course of a trip the time lost can only be made up by increasing the speed of the train over the remainder of the track within the limits designated for this purpose.

ART. 129. The speed of trains should be kept equal and uniform in the sections comprised between two stations; due consideration should be taken of the grades, curves, and condition of the line, and the least possible number of delays should be made to take water or fuel.

ART. 130. The speed of trains on passing through populated places, stations where they do not have to stop, and over sidetracks, especially when running against the switch blades, should not be more than 12 kilometers per hour in the case of long straight blades, and at the curves and small straight blades the speed should be still further reduced.

PAR. 1. When trains approach a stopping place the speed should be changed gradually and gently, so that no shocks or violent jerks are produced among the cars that might cause derailments. In the same manner, on the departure of the trains, the speed should not be suddenly increased.

PAR. 2. In the case of passenger trains the speed should be moderated on approaching a stopping place, so that the train may be brought to a full stop before reaching the point where the passengers should get off and it is necessary to again put the engine into motion before reaching the said point.

PAR. 3. The speed of trains should be decreased 500 meters before arriving at a branch line or junction of railroads, so that such trains may be completely stopped before arriving at the said places, if conditions so require it. The same shall be done if the engineer notices obstacles or any defect on the track.

ART. 131. Trains should be slowed down as much as possible on sidetracks, before bridges and viaducts, as well as when crossing over them. If it should be necessary to go slowly when crossing the latter, trains should be slowed in time, so that on reaching these places the speed may be reduced and the brakes applied.

ART. 132. The departure of all trains and locomotives not in train should be reported by telegraph to the next station or signal location in the direction such trains are moving, and the said departure shall not be made until the station receiving this report replies that the track is clear.

ART. 133. During a rain, a locust plague, or any other circumstance that might alter unfavorably the adherence of the rolling material (as, for example, the existence of weeds on the rails, etc.), the following rules, established for the purpose of avoiding train derailments in sections having steep grades, shall be observed:

1. All train employees, as well as those along the line, shall exercise a special watchfulness in those cases.
2. The speed of a train on going down grade should be reduced to 10 kilometers per hour, and even lower, if conditions require it.
3. The freight pulled by locomotives should be limited according to the grades of the line and the effectiveness of the brakes in operation. If the cause of the difficulty herein referred to happens upon the departure of the trains, these trains shall be conveniently divided into sections and some of the cars left at intermediate stations.
4. If the slippery condition of the rails on the steep grades is so marked that the sand boxes on the locomotive can not eliminate this condition, use shall be made of sand trolleys, intended for spreading sand on the rails before the passing of the train.
5. Relative to the brakes, the provisions in article 80 of these regulations shall be observed.

6. If, in spite of all these precautions, the slippery condition of the rails is of such a nature as to make the descent of the trains dangerous, traffic should be suspended until the abnormal condition of the running surface of the rails has been eliminated.

ART. 134. On every train the locomotive should always go forward, except in the cases where it goes slowly backward in switching operations at the stations.

PAR. 1. The pushing of trains by the locomotive is in general prohibited, except in the case of a superior force or ballast trains, etc., which, on account of the nature of the work, sometimes require this service. In such cases the engineer shall pay special attention to the movement of the cars and, above all, to the signals of the employee on watch, who should be placed at the head of the train.

PAR. 2. During a pushing service great care should be taken when the train is to stop, so as to avoid shocks and breaking apart of such train.

ART. 135. On mixed trains—that is, those carrying both passengers and freight—efforts should be made to place the passenger coaches at the end of the train, so that they need not be moved in switching operations required for the freight service at the stations.

ART. 136. When a special train is to be dispatched from a station the office shall give prompt notice thereof by telegraph (and if such special train should be countermanded, by telephone and finally in writing) to the station agents, conductors, and persons concerned, informing them of the time schedule of the said train, with necessary precautions to avoid any misunderstanding.

PAR. 1. For the purposes of this article ballast trains shall be considered as special trains, and, in general, all trains transporting material for the maintenance or repair of the line. When such trains arrive at a station special care should be taken, before continuing on their trip, to secure information of the location of other trains, and their stops shall be so arranged as not to disturb the movement of such other trains.

PAR. 2. In cases of extreme emergency, as, for instance, when an accident may have occurred to some train on the line, special trains or auxiliary locomotives may be dispatched immediately, and the conductor or engineer should be given the necessary instructions and notified by telegraph of the stations through which the said train or locomotive is to pass.

PAR. 3. Locomotives when not in train, without a fixed schedule, should, as a general rule, stop at all the stations they pass on their trip.

ART. 137. The movement of trolleys or automotive cars over the line, to take care of the maintenance and operation service, shall be regulated by the following provisions:

1. The speed of the trolleys must not be greater than 20 kilometers per hour and that of the automotive cars 30 kilometers per hour.
2. They must be provided with adequately effective brakes, considering the conditions of the line, and in addition, with auxiliary brakes in case the others are ineffective.
3. The weight of the freight or of the persons transported on these cars must be regulated by the grade of the track, the nature of the apparatus, and the strength of the brakes that are being used.
4. It is prohibited to tow trolleys or other similar cars by means of trains or locomotives when the speed of such trains or locomotives is greater than 15 kilometers per hour.
5. None of these cars may leave a station until they have been dispatched by the station agent, who, upon so doing, shall previously inform himself that the track is clear.
6. Employees engaged to move such cars shall always be equipped with a set of signals.
7. When such cars have to stop at any point on the line they shall immediately be removed from the main line.

PART III.—COMMERCIAL OPERATION

CHAPTER ONE.—*Schedules and rates*

SECTION I.—SCHEDULES

ART. 138. Railroad enterprises must establish schedules by which must be regulated the departure, arrival, and route of passenger trains, with an indication of the time of arrival and departure at the intermediate stations.

Art. 139. These schedules must be previously approved by the Department of Public Works before being put into effect, as well as all the changes that may be introduced therein. The enterprises are also obligated to send to the said department sketches showing the route of the trains.

Art. 140. Railroad enterprises must inform the public eight days in advance of the schedules of trains and the changes made therein.

Art. 141. The publication of the schedules ordered in the preceding article shall be made by the press, and they should also be posted in the stations, according to the provisions of article 44 of these regulations.

SECTION II.—RATES

Art. 142. General or special rates of railroad enterprises, as well as any change that may be made therein, should be approved by the Department of Public Works and published 30 days before being put into effect.

Art. 143. For the purposes of publication referred to in the preceding article the rates shall be posted at each station, in full view of the public, at the side of the ticket windows.

Art. 144. Enterprises can not demand greater charges for passengers and freight than those established by the published rate schedule.

Art. 145. General or special rates shall be applied by the railroad enterprises without discrimination or individual favoritism, exclusive of such exceptions as were agreed to by the National Government.

Art. 146. Inasmuch as the system adopted by our legislature is that of the maximum rate, the railroad enterprises shall establish their freight and passenger rates so as not to exceed the maximum types fixed in their respective concessions. With respect to the reduction of rates and other matters referring thereto, the enterprises shall adhere to their contracts, and the new concessionaires to articles 35, 36, and 37 of the railroad concession law in force.

Chapter Two.—*Transportation of passengers*

Art. 147. Railroad enterprises shall take measures assuring a sufficient number of passenger coaches to carry the number of persons who request transportation, and no coach may contain a greater number of passengers than can be seated therein.

Par. 1. If there is a very great passenger congestion at a certain period, the enterprise may dispatch two or more trains in place of the one established by the schedule and carry out the required provisions for the safety of traffic.

Par. 2. In the event of an extraordinarily large passenger congestion, as, for example, during migrations, etc., trains may be made up for this sole purpose and shall be considered as special trains for the effects of the precautions prescribed by these regulations. In this case freight cars, properly cleaned, can also be used with benches for the transportation of passengers and with all the measures necessary for the protection of the public.

Art. 148. The passenger ticket office at the principal stations shall be opened at least one-half hour before the departure of each train and 10 minutes at least before such departure at the stations of lesser importance.

Art. 149. Passengers who entrain at intermediate points where there are no ticket offices shall purchase tickets from the conductor as soon as required by him.

Par. 1. Passengers who board a train without the required ticket at a station where there is a ticket office shall pay the conductor, in addition to the regular price, a surcharge of an amount to be established in the special regulations, unless the fault for not having a ticket can not be imputed to the passenger, in which case such passenger shall be exempt from the payment of the surcharge.

Par. 2. Passengers who occupy coaches of a higher class than stated on their tickets shall pay to the conductor the difference in price or proceed to the proper coach.

Par. 3. Every passenger is obligated to present his ticket to the conductor when demanded by the latter and to leave it in the possession of the said conductor before arriving at his destination.

Art. 150. No person is permitted to travel on trains without the proper ticket or a duly authorized pass.

Art. 151. Children under 3 years of age shall not be required to have paid fares, on condition that they are carried on the laps of accompanying persons. Children from 3 to 7 years of age shall pay half fare with the right to occupy a seat; however, if in the same coach there should be traveling two children of these ages, they may not occupy more than one seat between them. Children older than 7 years shall pay the full fare.

Art. 152. The lack of the required ticket on a train en route or ready to set out is sufficient reason for the ejection therefrom at the point where such train may be of such persons as are not provided with a ticket and refuse to pay the charge for it.

Art. 153. On regular trains no transportation shall be made of persons suffering from contagious diseases, such as may be classified as being serious and dangerous for the other passengers, or of persons suffering from a disease the mere sight of which may be the cause of disgust or annoyance to the other passengers. The transportation of such persons shall be made according to the regulations and ordinances of the National Health Office.

Art. 154. It is absolutely forbidden to board or leave a train while it is in motion; to ride on the platforms, if they are not especially arranged to carry passengers, and to put the head out of the windows of the coaches.

Art. 155. Passengers are also forbidden to carry inside such coaches explosive or inflammable material, substances emitting a bad odor, dogs, or other animals; it is also forbidden to become intoxicated, fight, or utter offensive or indecent words on board trains.

Art. 156. If a train has to make a stop for any reason whatsoever, in the course of a trip, other than at the stations or the stopping points, passengers are prohibited from leaving the coaches unless the conductor so requests.

Art. 157. In case of accident or imminent danger any passenger is authorized to make use of the bell or alarm whistle or of the lever of the brake within the coach, but he is absolutely forbidden to make use of any of this apparatus without good cause.

Art. 158. The transportation of passengers by a railroad shall be made in accordance with the provisions of these regulations and the prescriptions of part 6 of the Code of Commerce.

Art. 159. The special regulations of the railroad enterprises should also include the provisions relative to passengers as established in this chapter and in the following.

Chapter Three

SECTION I.—BAGGAGE TRANSPORTATION

Art. 160. By the term baggage shall be understood wearing apparel and articles for the personal use of travelers; that is, the objects that are usually carried on journeys, in trunks, boxes, valises, baskets, satchels, hat boxes, etc., and also the samples carried by traveling salesmen. The following articles shall also be considered as baggage: Books for personal use, and the instruments and implements used in engineering, medicine, dentistry, photography, painting, music, carpentry, masonry, and other professions, arts, or employment of the travelers, and also equipment for riding, chairs, and beds folded or taken apart, implements for writing, sewing, and similar purposes.

Art. 161. No passenger can be forced to pay for excess baggage if the weight of the packages or articles carried by him does not exceed the weight of the baggage exempted from charges in accordance with the corresponding ticket and as established in the respective regulations.

Art. 162. Passengers are not permitted to carry baggage inside the coaches, except small packages or valises, provided that the contents are not dangerous to the safety of the passengers or inconvenient to them or emit disagreeable odors or emanations. In case of a difference of opinion the decision of the conductor shall be final.

Art. 163. Passengers must deliver their baggage at least 15 minutes before the time set for the departure of the train.

Art. 164. Baggage must be properly packed and marked.

Art. 165. The passenger is obligated to declare at any time, on the request of the enterprise or its agents, the contents of the packages that constitute his baggage.

Art. 166. The exemption of baggage from charges, up to the prescribed number of kilos, has a personal character and consequently is not applicable to third persons who are not members of the same family or party.

Art. 167. Baggage shall be delivered as soon as the train arrives at the proper station, after the presentation of the baggage check which the enterprises must issue to the passenger upon receiving his packages. This baggage check shall show the number of packages and their weight.

Par. 1. Baggage not claimed shall be stored by the enterprises, and after three days shall be subject to the payment of storehouse charges. If no one appears to claim this baggage within the period of a year it shall be sold in the manner established in article 202 of the Code of Commerce.

Art. 168. Railroad enterprises shall not bear any responsibility with respect to the packages which are carried in the passenger coaches and have not been duly delivered to the employees in charge of the baggage service.

SECTION II.—FREIGHT TRANSPORTATION IN GENERAL

Art. 169. Railroad enterprises must have available to the public a personnel and material sufficient to satisfy the needs of transportation at convenient hours.

Art. 170. Railroad enterprises may not refuse to transport any articles delivered to them, unless when, because of their nature, volume, or weight, it is impossible to load such material on the coaches or cars of the enterprise; when goods are exposed to immediate loss; when they are damaged or improperly packed; when, because of their explosive or inflammable nature, the precautions required by the official or special regulations of the enterprise have not been complied with; or when the declaration or shipping bill of the shipper does not contain the information required by law as necessary for transportation purposes; and also when a fortuitous case or force majeure impedes such transportation.

Art. 171. When requested by the enterprise, shippers are obligated to declare the nature of the contents of the packages presented by them for transportation.

Art. 172. Freight, after being transported, shall be delivered to the consignees at the respective stations within a period of time fixed by the special regulations, in accordance with the distances such freight must be carried in each case.

Art. 173. The transportation of explosive or inflammable substances, reputed as such in commerce, shall be made under all the customary conditions of packing, marks, and signs for this class of material, in separate cars, distinct from those used for carrying passengers and other freight. Such cars shall be moved and their contents delivered with all the proper precautions, and absolutely no employee shall be permitted to use matches, lights, etc., in their vicinity, and signals and employees should be used to notify the public of danger and to prevent persons from approaching close to such cars.

Par. 1. False declarations in connection with explosive or inflammable substances shall subject the responsible persons to the penalties provided for in article 195.

Par. 2. Soldiers and hunters may carry with them their ammunition in their cartridge boxes, belts, or handbags.

Par. 3. The provisions of this article are not applicable to special military trains or to freight trains on which there are agents of the Government instructed to accompany the expedition.

Art. 174. When animals for riding purposes are transported on passenger trains notice thereof shall be given at least one-half hour before the departure of the trains at the principal stations and at least one hour at the second-class stations. For the transportation of animals in general, requiring more than one car, in freight trains, the notification must be made at least one day in advance, and the animals must be at the station two hours before the time fixed for the departure of the train.

Art. 175. After its transportation, freight may remain in the warehouses or on the premises of the railroad enterprises for a period up to three days, beginning with the date of its arrival, before being subject to storage charges; exception is made of merchandise exposed to immediate loss or damage or emitting offensive odors, which freight should be called for on its arrival. When the period of time established in this article has elapsed the storage charges shall be paid, in conformity with the rates provided therefor in the special regulations.

Art. 176. In all cases not provided for in these regulations the movement of freight by the railroads shall be directed by the general conditions of the transportation contract, as stated in part 6 of the Code of Commerce.

CHAPTER FOUR.—*Accounting*

Art. 177. Railroad enterprises must carry on their accounting work and correspondence with the Department of Public Works and other national authorities in the legal language, which is the Castilian.

Art. 178. In addition to the books prescribed by the Code of Commerce, the enterprises shall preserve, for a period of five years, all the records that they have made, conveniently filed by stations and in chronological order.

Art. 179. Railroad enterprises are obligated to submit to the Department of Public Works the following documents, without any necessity of a previous demand:

1. A general statement, comprising the railroad movement for each trimester, in conformity with the models, Nos. 1 and 2 [not reproduced here] in which are shown the number of passengers and freight packages, duly specified with their weight in kilos and also the amount earned by each one of these branches of railroad operation, according to the tariff rates; and, in conformity with model No. 3 [not reproduced], a statement of the income and expenses of the enterprise, also per trimester, so that the statistical movement of the railroad may be published periodically.
2. Model No. 2 should be accompanied by two traffic-movement reports, one for outgoing and the other for incoming traffic, and including the classes of merchandise, fruits, construction material, miscellaneous goods, and animals, with their respective weights or quantities.
3. Upon closing each year of operation the railroad enterprises should submit a general statement, in summary form, of the year's business, using the same system prescribed by the aforesaid models, so that, after having been duly examined and compared with the trimester statements furnished, it may be published in the statistical section of the annual report of the Department of Public Works.
4. Railroad enterprises that still have the privilege of a guaranty of interest on their capital, or those in which the National Government owns a share, should submit each month the statement and reports referred to by Nos. 1 and 2. These enterprises are also obligated to exhibit, to the person whom the Government may designate therefor, the principal books, as well as the shipping records, bills, and other documents evidencing the general movement of traffic, its income, and expenses.
5. On closing accounts for each year the railroad enterprises should submit to the Department of Public Works a copy of the report (with a translation into Spanish if the original is in a foreign language), showing the information and statement of accounts to be presented at the general meeting of stockholders by the board of directors, if the said enterprises were organized in the form of companies.
6. Railroad enterprises shall also submit to the Department of Public Works a report or statement regarding the work performed during the year in reconstruction, maintenance, or improvement of the railroad lines, and the innovations that it is proposed to introduce for bettering the service; this statement shall be published in the annual report of the department.

PART III.—POLICE SERVICE AND RAILROAD OPERATION

Art. 180. The supervising inspection service or highest police authority for the operation of railroads in Venezuela shall be exercised by the Department of Public Works, through the Administration of Transportation Routes and Aqueducts and the special inspectors appointed by the National Executive on each railroad, in conformity with article 10 of these regulations. This police service includes all the measures intended to assure the safety and the regularity of train movement and to avoid any violations on the part of passengers and the public in general.

CHAPTER ONE.—*Special inspectors and the police*

Art. 181. The immediate agents of the National Government on the railroads concerned with policing the operation of the lines are the special inspectors referred to in the preceding article. These employees, in the exercise of their duties, shall use for their guidance the obligations prescribed in these regulations, which must be carried out by the railroad enterprises and by the public. Any violations of these provisions shall be duly noted by the inspectors and communicated to the Department of Public Works without any delays.

Art. 182. The functions of the inspectors in this matter shall be especially directed to all those measures having as their object the safety of the public and the railroad employees.

Art. 183. The inspectors are not permitted to direct their intimations or warnings verbally to railroad employees, but they may report any misconduct to the board of directors of the enterprises, requesting at the same time the assessment of the penalty that the employee has deserved in this case if his guilt should be proven.

Art. 184. Special inspectors have also such duties as that of agents of public order on the railroads, and in all cases when the inspector is not on the train the conductor shall assume his authority and exercise his duties with respect to public order on the train.

Par. 1. When a locomotive is traveling not in train the engineer shall be considered as the conductor in all matters relating to the duties of the latter.

Art. 185. The duties of the special inspectors regarding the preservation of public order on a train are as follows:

1. To prevent any abuse, disorder, or offense that may be attempted on board trains while en route, or at the departure or arrival at stations, and with the character of the authority with which they are invested expel from the trains the instigator or instigators of an abuse or disorder; and in the event the inspectors were unable to avoid the commission of a punishable or criminal act, to seize immediately the responsible person or persons and deliver them into the custody of the nearest civil authorities of one of the towns on the route. The inspectors in such cases shall also initiate the necessary indictment proceedings and secure all the statements and evidence that may be required, which shall immediately be submitted to the president of the State or to the governor of the Federal district, according to jurisdiction in the matter, so that the legal procedure may be carried out by the competent authority, and the said inspectors shall also inform the Department of the Interior of the entire matter.

2. In the event of an occurrence referred to in the preceding paragraph 1, the inspector, on arriving at the first telegraph station on the line, shall send a telegraphic report of this matter to the Departments of the Interior and of Public Works, as well as to the authorities nearest the place to which the train is moving, so that the necessary assistance may be given to him, and the train may wait at the respective station for the purpose of delivering up to custody the person or persons responsible for the punishable or criminal act.

3. In case a criminal act or a misdemeanor of any nature giving rise to a medical-legal investigation is committed by some employee on the train, and his service is indispensable to complete the established trip, the inspector, if unable to immediately replace the responsible person, shall refrain from stopping the movement of the train. In such cases he must take all the necessary precautions to prevent the escape of the guilty person and shall notify the traffic authorities and the terminal stations, procuring meanwhile all the evidence possible for him to obtain. He shall also immediately advise the board of directors of the enterprise by telegraph or by telephone, so that the necessary steps may be taken to replace the said employee at the first station where it is possible to do so. When the responsible employee has been replaced, or the train has arrived at its destination, the inspector shall deliver the said employee to the authorities so that legal action may be instituted. The legal authorities, in the cases mentioned, shall proceed in the same manner when the special or police inspector is not present.

4. In order that the special inspectors may impose their authority in all those cases referred to hereinbefore, they are permitted to carry and make use of a weapon, in addition to the uniform denoting their duties.

Art. 186. When the railroad lines are only under construction the functions of the special inspector shall be limited to keeping order at the places where work is done and communicating to the respective department any matters that may occur.

Art. 187. In addition to the national inspectors and the train employees the following shall also exercise the functions of keeping public order and shall be considered as employees of the police service, when on duty: Station agents, foremen and inspectors of the line, gate keepers, switchmen, or their substitutes. When it becomes necessary, these employees may request assistance from the proper local authorities, who are obligated to fulfill such requests.

CHAPTER TWO.—*Accidents*

ART. 188. Special inspectors shall give immediate notice to the Department of Public Works of any accident occurring on the railroad, together with all the details of the matter, and shall especially investigate to ascertain if the damages were caused by the defect or deficiency of the material or the equipment, or by unforeseen obstacles, or through malevolent intentions or negligence on the part of the personnel of the enterprises.

ART. 189. Railroad enterprises are obligated to make an immediate report of all accidents or damages to the Department of Public Works, and also of the causes thereof.

ART. 190. In case of accidents the inspectors and other employees of railroads, and even passengers, may sound the whistle or ring the alarm bell on the locomotive or operate the brake lever in order to stop the train.

ART. 191. The inspectors and other railroad employees, and even the passengers, must render assistance in case of accidents or damages. The former shall summon all the laborers in that vicinity that they may deem necessary to prevent, as soon as possible, a continuation of the said damage.

ART. 192. In order to prevent fires on the railroads and at places adjacent thereto, the following precautions should be observed:

1. On those sections where fires may be easily started, as well as on bridges, partly or entirely constructed of wood, the ash container should be shut as tightly as possible at those points and the fire should not be stirred there; the stopping of trains at those places must be avoided.
2. It is in general prohibited to place in the fire box such fuel as may produce sparks or scatter live coals on the track.
3. Still greater attention shall be paid to these precautionary measures when the locomotive is moving cars with explosive or inflammable substances or when it is passing cars loaded with such material.
4. In the event that a fire breaks out on the train itself the said train should be stopped at once, the burning car should be separated from the others, and efforts made to extinguish the fire, but no attempt should be made to reach the nearest water station unless the said station is located only a very short distance from the place where the fire occurred.

ART. 193. When two locomotives, because of some accident, have to be coupled to the front of a train, the engine that is to render the necessary assistance should generally be placed foremost, and if the engineer is to act as conductor of the train he shall operate the brake and watch the track and the signals. Both locomotives should operate jointly, if possible; but the foremost locomotive shall be the first to release the steam upon departing and the last to shut it off upon arriving at a station. The duties of the engineer on the second locomotive are the adjustment and the maintenance of the connections between the locomotives and the train, as well as watching these connections during the trip. The engineer of the auxiliary locomotive shall place himself under the orders of the train conductor.

CHAPTER THREE.—*Penalties*

ART. 194. Failure to fulfill any of the provisions contained in these regulations, if not thereby subject to any other action, shall make the railroad enterprises liable to be penalized by fines up to 500 bolivars, according to the circumstances of the case, by the Department of Public Works. In the event of a repetition of the offense the fine may be increased up to 1,000 bolivars.

ART. 195. Violations of the provisions of these regulations on the part of passengers or the public may be punished with fines up to 100 bolivars, or arrest up to five days, by the special inspectors or the proper local authorities, without prejudice to the civil or criminal responsibility to which they may be subject.

PART IV.—REGARDING THE SPECIAL REGULATIONS OF RAILROAD ENTERPRISES

ART. 196. Every railroad enterprise in operation is obligated to have special regulations for the guidance of all persons in their service and for passengers and the public in general.

Art. 197. The special regulations for passengers and the public in general which the enterprises may adopt should previously be submitted to the Department of Public Works, and in order for them to have any binding force must be approved by the said department. Any modifications or reforms of the existing regulations are subject to the same prescriptions.

Par. 1. Any other regulations that the railroad enterprises may make for their own service should also be submitted to the Department of Public Works for examination and also for approval in the case of enterprises to which the nation guarantees an interest on their capital.

Art. 198. The regulations of railroad enterprises for their own service have as their purpose to maintain the discipline of their personnel and provide for good service in all the departments of the railroad, the safety of passengers and of the property intrusted to them for transportation, and also the safety of their own employees and the protection and preservation of the interests of the enterprise.

Art. 199. The regulations of the enterprises concerning passengers and the public in general should be posted at each station.

Art. 200. The special regulations of the railroad enterprises, of whatever nature they may be, can not alter or modify in any manner the provisions contained in this law or in the laws of the nation.

Art. 201. The railroad enterprises, as well as the employees engaged by them, shall be obligated to comply strictly with the clauses of their special regulations and also with those contained herein.

Part V.—Special Provisions Relative to the National Railroads

Art. 202. The lines belonging to the nation shall be subject to the general provisions of these regulations as regards their traffic and their technical and commercial operation. With respect to their administration, the provisions stated in this part shall also be observed.

Art. 203. The administration and operation of these railroads is under the supervision of the Department of Public Works, and this function shall be exercised in every case by a managing director, to be appointed at the choice of the Federal Executive, and also by subordinate employees required by the necessities of the service.

Art. 204. For the office of directors of national railroads, engineers with degrees or persons of known competency in the matter of railroad operation shall be appointed. Their salaries or emoluments shall be established in every case by special resolutions, chargeable to the operation account of the respective enterprises.

Art. 205. The duties of the managing director are as follows:

1. Upon assuming the duties of his office, to take an inventory showing the estimated value of the property and the accounts payable and receivable of the enterprise. This inventory shall be made jointly by the director and a person commissioned for this purpose by the Department of Public Works.

2. Organize all the offices and stations of the railroad, the workshops, etc., and employ the necessary workmen, as well as the entire personnel of the enterprise.

3. Draw up the special regulations of the enterprise, which shall be submitted to the Department of Public Works for consideration.

4. Establish the schedules and fix or modify the passenger and freight rates, always with the reservation that the same must be approved by the Department of Public Works.

5. Direct the operation of the railroad and consequently perform and cause to be performed by all employees the provisions of these regulations, as well as the direct orders received from the said department.

6. Direct and inspect the maintenance work of the railroad and study the methods and procedures that can be put into practice for the benefit of the enterprise.

7. Draw up, three months in advance, an annual estimate of expenses and probable income of the railroad, giving all information in detail, to be submitted for the consideration of the Department of Public Works. He shall also notify the said department of any modification which it might be indispensable to make in the said estimate in the course of operation.

8. Submit monthly to the Department of Public Works the traffic records showing the income and expenses of operating the line, according to the models established in article 179 of these regulations, together with the documents

verifying these figures and a general report regarding the progress of the enterprise.

9. Send annually to the aforesaid department a statement and the general balance for the fiscal year and a report of the condition of the enterprise and of the modifications that should be made in its technical and administrative operation.

10. Submit each week to the Department of Public Works the traffic statistics, showing the tonnage, destination of the freight, and the number of passengers.

11. Submit to the Department of Public Works, in their monthly reports, an enumeration of all the material that it is necessary to acquire specially for the good service of the enterprise, so that this office may make the required appropriations.

12. Attend to all the other functions or needs of the technical or commercial operation of the railroads.

Art. 206. Payments made by these enterprises, with reference to the estimates fixed in their budget for their employees, shall be made at the expiration of every 15 days, this amount chargeable to the gross income of the said enterprises; and, as regards the miscellaneous expenses, the general amount shall be paid from the same income. A special record should be made of such expenses, a copy of which shall be sent weekly to the Department of Public Works for approval. This record should be accompanied by a prospectus of the work that it is proposed to perform during the following week, together with all the proper information, plans, and estimates so that the department may be able to make an appraisement that, according to the report furnished, will more or less affect the total amount of the expenses set aside for the coming week.

Art. 207. The director each month shall make a liquidation of the operation accounts, and shall make an appropriation of 10 per cent from the net profits for the renovation of the rolling material, as well as the stationary material, all the equipment, etc., which amount shall be kept as cash on hand by the enterprise, to be used when necessary, with the approval of the Department of Public Works. The remainder of the net profit shall be delivered to the treasury agents of the respective localities. A statement, supported by the records, shall be submitted to the Department of Public Works showing the disposition of these amounts.

Par. 1. In the event that the income is not sufficient to cover the expenses the Department of Public Works shall provide the enterprise with the sums necessary to make up the deficit.

Art. 208. The director, in matters concerning the railroad service, shall have the privilege of being exempt from the payment of postal and telegraph charges.

Art. 209. The Department of Public Works shall frequently send special employees to make an inspection, from a technical and administrative point of view, of the progress of the railroad enterprises, and the directors shall furnish the said employees with all the data, books, and documents that the latter may request for the better discharge of their duties.

Art. 210. The Department of Public Works shall open a special account with every railroad enterprise, wherein they shall be credited with the sums that are being delivered by them as the net operating profit, and shall be debited for the amounts given to such enterprises in the event of a deficit or extraordinary expenses duly established.

Art. 211. In case the National Executive should decide to execute lease contracts for the operation of these railroads the proper modifications in the provisions of this part shall be made for each case.

Art. 212. The railroad regulations of January 13, 1892, are hereby revoked.

Art. 213. The Secretary of Public Works is charged with the execution of this decree.

Given, signed, and sealed with the seal of the Federal Executive and legalized by the Secretary of Public Works, in the Federal Palace, in Caracas, on the 11th day of December, 1915, in the one hundred and sixth year of independence and the fifty-seventh of the federation.

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